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Union Shuts In North Colorado Well; Big Drilling Campaign Possible

By V. B. Guthrie

STAFF REPRESENTATIVE

DENVER, Dec. 22.

THIRTY-nine days after the Union Oil Co. of California wildcat on the Wellington structure in northern Colorado blew in as a gas and oil well, the big valves were closed and the well was shut in for the first time. This operation has proved to be of major importance among the oil operators of the country because of its strategic location, the prospects for the opening of a new and important field, the spectacular performance of the well itself, and the effect it will have in prompting extensive exploration work in a new and large area.

The well is located on the NW ¼ of 31-10n-68w, Larimer county, 6 miles north and west of Wellington, on the Colorado & Southern railroad; 14 miles north of Fort Collins, the largest town in the immediate vicinity of the test; 72 miles north of Denver and 30 miles south and west of Cheyenne, Wyo. It is approximately 90 miles due south in an air line from the Rock Creek field, in Carbon county, Wyo., the nearest producing district, and 200 miles south of the Salt Creek field.

Between this location and the producing fields in central Kansas is a vast expanse of territory which has been but little prospected and which now will undoubtedly receive considerable attention from operators as a result of the information disclosed by the drilling of the test. On the west there is no producing field east of California with the exception of a small area in western Colorado which has a small output from shallow wells while on the south nothing of importance has been opened up between that location and northwestern New Mexico with the exception of the old Florence field in the south central portion of the state.

Structure Long Known

The well was started by the Union Oil Co. in March, 1923, upon what was designated as the Wellington structure after it had secured leases upon approximately 10,000 acres on this dome and another, but smaller structure, immediately to the south known as the Fort Collins dome. It was started with a 20-inch hole as a deep test for the purpose of exploring all formations down to the bottom of the Dakota figured at about 5,300 feet. The structure itself has been known in a general way since 1908 and two wells have been drilled upon it. One of these was put down the following year by the Poudre Oil & Gas Co., on the Sw ¼ of Ne ¼of 4-9-68, in the saddle between the Wellington and Fort Collins domes, as now mapped, but was abandoned at 4,000 feet, or 700 to 800 feet above the sand now found productive. The other was drilled in 1917 by the Keoughan-Hurst Drilling Co. on the same section upon which the discovery well is located, in conjunction with the Roxana Petroleum Co., which had taken leases on 14,000 acres. It found a showing in the shallow sand but was abandoned without being carried down to the deep sand.

Most of the large operators in the Rocky Mountain district had at one time or another turned down an opportunity to acquire the leases and put down a test partly due to the great depth to which a well would have to be drilled and partly to a belief, almost amounting to a superstition, that no oil bear-

Will Not Be Factor In 1924 Crude Market

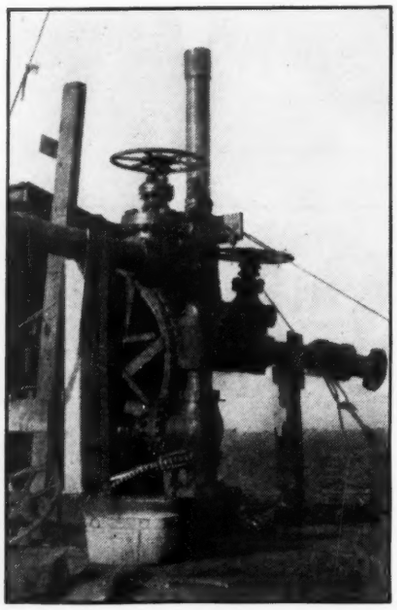
AT THIS time it does not appear that northern Colorado will be a factor in the crude oil markets of the country during 1924, despite the encouraging performance of the Wellington dome well described in the accompanying article.

Admittedly, this is the most important event in Rocky Mountain territory during 1923 and from indications now, the most important in several years. Numerous other structures of equal promise exist in the northeast fourth of Colorado and these will doubtless be drilled by able companies. Many companies are interested in this territory, hold acreage there and are planning drilling campaigns.

Here, however, is the situation and its bearing on the immediate future: There is one well which may be good for several thousand barrels of oil—the quantity is unknown. It was started in March and required eight months to drill, although some two months time was lost. The depth at which production was found will make any sizeable drilling campaign on this or other structures where production is looked for, a long time in attaining the proportions where the output of oil will be an important addition to the total supply. Northern Colorado must, therefore, be thought of now as an important future possibility and not something comparable to a Burbank or a Powell.

Lawrence E. Smith

ing structures of importance existed below the line that separated Wyoming and Colorado. This same objection applied to prospecting areas in northern and northeastern Colorado where the sands are known to lie at a great depth and where alluvium deposits have hidden



Fittings in place ready to close the valves.

many of the structures believed to exist in the area.

The Union company encountered almost no difficulty out of the ordinary in drilling the well until it reached a soft dark-grey shale at 4,120 feet which caused cavings, a fishing job or two and minor troubles which delayed completion close to two months. Up to this time nothing of importance had shown except a small showing of black oil at 950 feet, the formations consisting mostly of grey shale interspersed with streaks of hard shale and sandy shale and comparatively little water.

The bottom of the hole on Nov. 10 was at 4,285 feet in a gray shale. At that time it was cased for 39 feet with 20-inch; 641 feet of 15½-inch; 1,178 feet of 12½-inch; 2,554 feet of 10-inch; and 4,234 feet of 8¼-inch pipe. At this stage, with 51 feet of open hole at the bottom, gas began to make its appearance in small quantities, probably 100,000 cubic feet per day. It was decided to lower the 8¼-inch casing before drilling in and underreaming was commenced and another joint of pipe had been screwed on at the top. While this work was in progress the flow of gas continually increased until it was making around 5,000,000 feet. Early in the morning of Nov. 11 the well drilled itself in as an immense gasser.

Gas Dry At First

The gas at first was like a white vapor almost colorless and apparently dry. So pronounced was this characteristic that the opinion was almost universal among the oil men who inspected the well that it had opened a gas field and that there was little or no chance for the sand from which the gas was coming to yield oil on the structure but that oil likely would be encountered in lower formations which had not been penetrated. Gas of the quantity and nature encountered was the last thing expected by the men in charge of the operation and while almost any possible emergency in bringing in an oil well had been anticipated, no preparations had been made for a gas well of that proportion.

Preparations for shutting in the well were at once commenced. It was estimated at the time that the pressure was around 22,200 to 2,400 pounds to the cubic foot and a week later calculations made by placing an instrument in the column of gas indicated that the open flow was approximately 80,000 cubic feet per day. In the meantime the shutting-in connections were assembled from Casper and other Wyoming camps. These included a 7,000-pound master gate to be hinged onto a base attached to the 8¼-inch casing so it could be swung over the casing when ready. Attached to this gate was a 1,700-pound gate valve which was to have been left open when the master gate was swung into position.

The difficulty to be encountered in shutting in the well soon became apparent. The well was, apparently drilling itself into the sand and was throwing out chunks of shale, rocks and pebbles. These were cutting the derrick to pieces and churning a big cavtiy at the bottom of the hole in the center of which was swinging the unlanded 8¼-inch casing. The gas worked its way around the outside of the smaller casing up to the 10-inch casing at 2,554 feet and began to flow out between the two strings at the top. The solution of this problem was attempted by pumping mud and cement in between the 8¼ and the 10-inch casings and attaching a gas clamp at the top into which was placed a 2-inch nipple.

Fittings Are Torn Off

This work was finished on Thanksgiving day and the master gate with the valves and connections all assembled in place, was moved up to the well and attached to the hinged base and gradually lowered into position over the top of the casing. This was successfully accomplished and all was in readiness for shutting in the well. The valves were partially closed that night but it was decided to wait until next day to completely shut them. During the night the gas broke through the 8¼ and the 10-inch casings, tore off the gas clamp and damaged the top joint of the smaller casing. The threads on the 2-inch nipple in the gas clamp and other fittings were completely stripped by the force of the pressure.

This meant that the work had all to be done over again. The next step was to raise the smaller casing with hydraulic packs and patch it. Then mud was again pumped betwen the casings and also between the 10-inch and the 12½-inch, and cemented and another gas clamp put in place to cover the tops of the three strings. The cellar of the well was then pumped out and cleaned for the purpose of enclosing all the casings in a solid block of cement 10 cubic feet in diameter. This work was finished about Dec. 18 and time was given the cement to set firmly. On the morning of Dec. 20, the gradual closing of the valves was commenced and by the middle of the afternoon the well had been shut in.

Begins To Show Oil

While the work in shutting in the well was in progress it gave a spectacular performance which attracted much attention. On the morning of Nov. 28, the almost colorless stream of gas coming out of the casing began to turn to a darker shade and gave indications of beginning to show oil. The gas was much wetter and undoubtedly manifested a gasoline content. This was an entirely unexpected development and changed the whole aspect of the discovery. During the next few days the vapor continued to darken in hue and oil drippings commenced to make their appearance around the broken cap and on the weeds and fences in the vicinity of the well. At this time conservative estimates put the flow of oil with the gas at 100 barrels per day. This was mostly a fine spray which shot up in the column of darker gas to a height of 150 feet without breaking and then spread out like an umbrella several hundred additional feet in heighth.

Estimates were now increased to 200 barrels to 500 barrels by officers of the company while outside estimates were much greater. Weeds picked two miles away from the well were coated with oil and when the wind conditions were right, the oily vapor saturated houses and landscape over an area at least 10 miles square. Live stock had to be moved out of the district. Men shutting in the well had to don slickers as well as the government gas masks which they were wearing and went about their work with cotton and cup grease in their ears to shut out the roar.

An officer of the company picked up a rock weighing 3 pounds which had

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Here is the history, to date, of the big gas and oil well in northern Colorado. Since this test was first located, its progress has been followed in these columns, as it was considered to be one of the most important in the Rocky Mountain region. Its result has demontrated that it is. The complete story of its significance and of the activity it has brought about is herewith given by a writer who has gained his information first-hand.—Editor.

THIS WEEK'S OIL NEWS SUMMARIZED

Production

(Production News pp. 49-64)

THE past week was marked by several increases in crude oil prices, small but nevertheless significant of the upward trend that has recently been assumed. The changes were 15 cent advances on Cabell, W. Va., and Somerset, Ky., crudes, posted on Dec. 22; a 15-cent advance on Corning, O., on Dec. 21 and the same amount on Wooster, O., oil Dec. 21. On this latter date all grades of Illinois, Indiana and northwestern Ohio oil were advanced 10 cents.

Statistically, the advances seem entirely warranted, considering that the equalization of consumption and production is probably being discounted some months in advance, as it usually is. Substantial declines in the domestic output have been occurring for several weeks until at the close of the past week **National Petroleum News** estimates the production by districts as follows:

Oklahoma	371,891 barrels
Kansas	71,285 barrels
Rocky Mountain	149,195 barrels
Louisiana-Arkansas ..	172,214 barrels
Texas, including	
Coastal Louisiana ..	342,560 barrels
California	701,350 barrels
Eastern	111,000 barrels

The big encouragement is in seeing the figure fall well below the two million barrel-mark which had prevailed for some months. A further encouragement is seen in the American Petroleum Institute's estimate on additions to stocks for November, issued last week. It is shown that stored domestic crude supply was increased during the month by 182,135 barrels daily. In October the increase, domestic crude only, was at the rate of 284,000 barrels daily.

Field reports show there is little disposition to speed up drilling and there is warrant for the belief that by the time a sizeable campaign can check the decline in production, the demand will be equal to the supply.

Financial

(Financial News pp. 92-94)

OIL stocks were buoyant early last week and many of the leading issues made substantial gains over the week although there was some recession in prices as trading lagged Friday and Saturday. Invincible and Standard of California were particularly strong.

Continued falling off in production and price advances in Central States and four grades of eastern crudes stimulated trading in oils. The opinion prevails in Wall Street that the leading oil companies will have a profitable year in 1924, being in position to take full advantage of accumulations of cheap crude oil made this year.

Penn-Mex fuel was the outstanding of the Standard Oil group. The bringing in of two large wells recently in the company's Mexican properties caused a spurt in the price of this stock to 45. It later fell to 34 but its close at 40 was a net gain of 11¼ points over the week.

Several of the pipe line stocks were displayed strength and advanced several points. A few of them continued weak.

Most of the Independent stocks on the New York Curb were strong. Trading in Southern States reached a high rate and the stock rose to a new high for the year at 32¼.

Tank Wagon Changes

CHICAGO, Dec. 26.—Standard Oil Co. of Indiana advanced prices of gasoline 1 cent at Kansas City Dec. 24.

* * *

TULSA, Dec. 26.—Magnolia Petroleum Co. advanced kerosene 1 cent to 11 cents at Oklahoma City and throughout western Oklahoma Dec. 24. Price of gasoline in Oklahoma City district was advanced 1 cent Dec. 24 but price within Oklahoma City was unchanged. Magnolia advanced price of kerosene 1 cent at Dallas Dec. 12.

* * *

DENVER, Dec. 26.—Continental Oil Co. Dec. 26, advanced gasoline prices 1 cent a gallon at Albuquerque, N. M., to 19 cents tank wagon, 21 cents service station.

* * *

CLEVELAND, Dec. 26.—Gasoline taxes in Maryland and Washington become 2 cents a gallon Jan. 1. Each state now has a 1-cent tax.

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TULSA, Dec. 26.—Magnolia Petroleum Co. advanced kerosene 1 cent at Muskogee Dec. 24 to 11 cents and reduced gasoline service station price at El Paso 2 cents Dec. 20 to 13 cents. Tank wagon price remains at 12 cents.

Crude Price Changes

Dec. 21.—Joseph Seep Purchasing Agency advanced Corning, O., oil 15 cents.

Dec. 21.—Ohio Oil Co. advanced Wooster, O., crude 15 cents and northwest Ohio, Indiana and Illinois grades, 10 cents.

Dec. 22.—Joseph Seep Purchasing Agency advanced Cabell, W. Va., crude 15 cents and both grades of Somerset, Ky., 15 cents.

Dec. 26.—Joseph Seep Purchasing Agency advanced Bradford Allegany and other Pennsylvania grade oils 25 cents. Bradford-Allegany new price $3.10 and other Pennsylvania $2.85.

Indian Refining Co., has classified as of Dec. 15, western Kentucky crudes it buys, chiefly from Warren and Allen counties, as heavy and light. The heavy grade is oil of 32 gravity and under. Somerset medium price paid for higher grade.

Marketing

(Marketing News pp. 81-94)

STRENGTH in the Mid-Continent gasoline market continues unabated. Prices of spot Navy gasoline are ½ cent higher than a week ago and three large refiners—Cosden, Empire and Roxanna—have set up a price of 8½ cents at which the industry may "shoot". Whether they will be able to maintain this quotation which is ¾to 1 cent higher than the spot market, only the future can disclose.

Opinions vary greatly as to the turn gasoline will take after the first of 1924. Some observers believe the recent bullishness is the beginning of an upward swing. Others hold the opinion that prices may recede after inventory taking and real winter weather brings a curtailment in consumption.

Oklahoma is drawing on stocks to meet the demand and in other Mid-Continent districts, accumulations are small. Through the east gasoline output seems to be about on a level with consumption.

A vast amount of lubricating oil trade is flowing into northwestern Pennsylvania and prices have risen sharply in the last week. This business started a few days after the advance in Pennsylvania crude and has continued at an increasing rate since. Some refiners unable to make shipments within a few weeks are turning away orders. South Texas pale and some red oils are more active and ½—cent advances have been made.

Fuel oil has improved and prices have gradully risen. Contracts more favorable to refiners, running from 80 per cent of the cost of crude when crude is cheap, down to 60 per cent when crude reaches $3 a barrel, are being signed instead of the rate of 60 per cent flat.

Kerosene prices are steady and demand continues good. Gas oil has shown a slight improvement.

Paraffin wax is strong and comparatively scarce.

(Continued from page 18)

been thrown out of the hole. The crown block, made of 10-inch wood reinforced with steel was practically worn away before the derrick was torn down. Farmers living two miles away were unable to feed hay to their stock on account of the oil coating upon it and a once white cat, almost black in color from having strayed out of doors, was picked up an equal distance away.

It is reasonably certain that the well was not in the sand when it commenced gassing. It did, apparently, drill itself into the sand and in this manner the coming of the oil is accounted for in part and in part from the release of the gas pressure which allowed the oil to come in. Nothing is known definitely as to the thickness of the sand. Carroll H. Wegemann, chief geologist for the Midwest Refining Co., estimates it at around 29 feet while Max W. Ball, under whose direction the structure was mapped for the Royal Dutch interests, says it probably is a little less than 29 feet. However, these estimates are based on outcrops some distance from the well.

The sand has been given the name locally of the Nio-Benton which corresponds to the Frontier in the Wyoming fields known in the Salt Creek field as the Wall Creek series though they have not been correlated at Wellington. At a depth of 625 feet below the Nio-Benton another sand, the Muddy, is expected. This sand is productive in some of the Wyoming fields. Another sand, the Dakota, is expected at about 175 feet below the Muddy. The Dakota is the principal producing horizen in Rock Creek, Lost Soldier and Mule Creek in Wyoming and in Cat Creek in Montana and also on the Hogback dome in New Mexico.

Locations For Three More

One detail map of the structure generally used at present was prepared in 1917 by A. T. Schwennesen, E. W. Kranpert and C. H. Hensley. This shows 2,100 acres on the Wellington dome and 1440 acres on the Fort Collins dome within the closing contours. However, the performance of the discovery well gives indications that the field may be much larger than indicated by these figures. The discovery well is believed to be exactly on top of the Wellington dome and wells drilled lower on the structure are expected to come in for oil. The Union Oil Co. is starting two wells on the Wellington dome which are located with the expectation of drilling directly into the oil sand. One of these will be on NE ¼ of SW¼ of 31-10-68 and the other on the SE¼ of the same section, both in the same section as No. 1. Another test is also being started on the Fort Collins dome on NW¼ of 30-8-68, three miles north of Fort Collins. This is to be deeper drilling and the sand is expected at 4485 feet.

Many Companies Active

The discovery has attracted the attention of large operators from the Mid-continent, Texas and California fields and most of them have scouts going over all sections of the state. Among the companies most active are the Sinclair Consolidated Oil Corp., the Ohio Oil Co., the Empire Gas & Fuel Co., the Standard Oil Co. of California, Midwest Refining Co., Midwest Oil Co., Carter Oil Co., the Arkansas Natural Gas Co., Continental Oil Producing Co., Mutual Oil Co., and the A. E. Humphreys interests. Some of these are said to have taken leases on large areas in other districts.

Union Oil Co. has most of the acreage on the Wellington and Fort Collins

First attempt to shut in well showing change in the shade of gas.

domes and officials estimate that they will spend at least $10,000,000 in development work within the next two years. The fact that oil bearing sands at great depth have been found in northern Colorado means extensive exploration work over a large area that has been neglected in the past.

Oil men watching the performance of the Union well are convinced that it is flowing by heads as evidenced by the change in color of the gas and quantity of oil at intervals of about 10 minuets accompanied by an increasing roar of the gas at these periods. The company geologists believe that the gas pressure will be sufficient to lift the oil to the surface in spite of the depth.

It is estimated that between 10,000 and 15,000 automobiles were at the well on each of several Sundays following its coming in. Charles S. Sherman, manager for the company in the Rocky Mountain district; James Douglas, company geologist who spotted the well; E. N. Miller, field superintendent; R. D. Burnham, head of land department; William G. Gallagher, from the California offices, and other Union company officials have been at the well almost continously since it came in and it has also been visited by several of the directors and executive officials.

Railways to Extend

No tests of the oil from the well have yet been made though Harry F. Sinclair, of the Sinclair Consolidated, who is much interested in the operation, stated when in Denver that he had been informed it was high grade and good quality. It is generally accepted as a foregone conclusion that the bringing in of the well demonstrates the presence of a large pool and preparations in many quarters are going ahead with such a conclusion in mind. The Union Pacific Railroad Co. has applied to the Interstate Commerce Commission for permission to extend its line into the field from Fort Collins and surveyors are now locating the route.

Arkansas Distributor Expands Rapidly

FORT SMITH, ARK., Dec. 20.—When Edgar A. Gibson entered the marketing end of the oil business five years ago, he started with one service station in this city. Today the Gibson Oil Co. operates 46 wholesale and retail stations in Arkansas and Oklahoma, seven of which are located in Fort Smith.

The company uses a color scheme of red and yellow. The stations are scattered and conveniently located so that the motorist always finds himself near a red and yellow station. The stations are equipped with greasing racks and greasing service is given free, as is air and water.

Mr. Gibson believes that a business built on quality and a fair deal to the public will be substantial and lasting, and he drills every employe along the lines of courtesy and consideration.

The company calls its gasoline Power and Zero gasoline and oils and greases. Triumph. The headquarters are on the eighth floor of the First National Bank at Fort Smith.

The Gibson Oil Co. has wholesale and retail stations at the following cities in Arkansas: Van Buren, Alma, Mulberry, Clarksville, Russellville, North Little Rock. Little Rock, Ola, Booneville, Danville, Hazen, Waldron, Charleston and Greenwood. In Oklahoma, Gibson stations are at Arkoma, Moffett, Spiro, Poteau, Panama, Talihina, Keota, McCurtain. Quinton, and Red Oak.

Test Near Tonopah, Nev.

LOS ANGELES, Dec. 22.—Forty miles west of Tonopah, Nev., a small oil boom is just getting nicely under way. It was started by traces of petroleum in water wells, reports say.

A test hole is being drilled at Coaldale, in that region, by the Merger Oil Co. of which C. W. Taylor is president. The company is asserted to be largely made up of officials of the Tonopah Railway Co. The hole is down a little more than 500 feet.

Nebraska Jobbers Discuss Better Selling And Management

By Warren C. Platt

OMAHA, NEB., Dec. 21.—SUGGESTIONS for better management and better merchandising by Independent jobbers were made at the annual meeting of the Nebraska Independent Oil Men's Association here, Dec. 18. The suggestions came from the 50 and more jobbers who attended.

The national advertising campaign of the National Petroleum Marketers' Association of Chicago was enthusiastically endorsed and nearly a dozen oil men present said they would make application at once to join it. Most of these were men, who, six months ago, had expressed themselves as being unable to see any value from that campaign. The association also voted to co-operate on the interchange of Independent coupon books.

L. L. Coryell of Lincoln, Neb., president of the Nebraska association and of L. L. Coryell & Son, was one of those who said that he was going to apply for membership in the adevrtising campaign but who, until recently, had been unable to convince himself that it had any value. He said that when he first heard of the campaign, it sounded too far away, but the more he heard of it, and the more he studied it, the more convinced he became that it was just the thing the the Independent jobber needed. He was not only going into it, but was going to do all he could to get every jobber in Nebraska into it, he stated.

Mr. Coryell was re-elected president of the association. He was the only nominee reported by a committee consisting of Messrs. Reinhardt of Manhattan Oil Co. of Omaha, Linderman of Central City, E. M. Davis, of Cozad, W. F. Bilby, Fairbury, and Albert Maust, Falls City. Mr. Coryell asked the committee to make a special effort to get someone else to act as president, but after canvassing possibilities during the day, the committee, at the afternoon session, recommended unanimously in favor of Mr. Coryell and he was elected by acclamation.

New Secretary-Treasurer

This was the first public appearance, at a meeting of his association, of C. M. Sutherland, the new secretary-treasurer, an office he's held for only a few months. President Coryell in introducing him said, that if his administration didn't get credit for anything else in the world, it did demand credit for having found Mr. Sutherland.

Mr. Sutherland is not an oil man but he has had many years selling experience in different lines. He was taken from the secretaryship of the State Retail Dealers Federation.

Mr. Coryell in outlining the work of the past year named the following points:

Association Accomplishments

Helped kill bill to license trucks at a cost of $100 to $300 per truck. The association got the Ford Motor Co. at Detroit to wire all its dealers in the state to fight the bill. Also got active work from the creamery companies.

Got proposed increase in kerosene and gasoline inspection tax cut from 6 cents to 3 cents. Mr. Coryell took full responsibility for the 3 cent fee for, as a practical proposition, he accepted it, lest the state turn around and exact a 2-cent gasoline tax. However, the cost of operating the inspection department and the large volume of business, Mr. Coryell thinks, will warrant a reduction of the inspection fee to 2 cents a gallon.

Fought giving away pumps by oil companies.

Urged code of ethics. Mr. Coryell urged members not to duplicate pumps. "It's all right to go after another oil company's business—go after it hard, I do it myself, and go after it to get their pump out and put yours in its place, but don't try to move your pump alongside of your competitor's pump in front of the same dealer. You both lose money," he said.

Opposed giving away of candy, kewpie dolls and other gifts except on opening days of new filling stations. This gift proposition has gotten to be quite a bad one in Nebraska. Things are given away with gasoline and oil on the slightest excuse. It got so bad that the Standard of Nebraska got up a big general raffle with half a dozen first class cars as prizes. This raffle had been advertised several days, when it was withdrawn because of government objection.

The Standard officials were reported as saying—that if the announcement of the raffle did nothing more than haul the industry up short and make it realize the nonsense of that kind of business, it was well worth the time and effort.

To Get Farmer Business

Mr. Coryell said he would like to know some way in which the farmers' co-operative stores could be sold by the ordinary jobber. He said that he has 81 towns in which his trucks run and they haven't been able to get a single farmer's co-operative store.

This later brought on quite a discussion on the value of the farmer's co-operative store and whether or not the co-operative movement is getting anywhere. W. F. Bilby of Fairbury frankly said that the accounts of many co-operative stores were not worth having—that he wasn't looking for them and didn't want them. He said some of the stores came around to him for a special price on gasoline, because they were dealers and he told them that they would get just the same price that every other dealer got, that if he did give them a special price they'd advertise that all over the state, and then be back for another one.

In his territory there were only a handful of them and they were not gtting anywhere, he said.

Other jobbers said they had some co-operative store accounts but they didn't last very long because the stores generally went broke. However, President Coryell said that the stores were flourishing greatly, at least in numbers, in his part of the state. It was remarked that more than 2000 people attended the recent convention of co-operative store interests at Omaha and that sometime past the group had bought 10 carloads of lubricating oil on behalf of the stores in the state.

To Put Out Road Map

The association voted to get out a co-operative road map of the state of Nebraska. Just what form it will be in is left to the officers, although the suggestion was, if possible, to make it cover all of the state and all of the roads and towns. Owing to the size that such a map would have to be, it may be cut up into sectional maps. The thought was to show on this map all of the towns where Independent gasoline can be obtained and to list thereon all of the members of the association.

Mr. Coryell also suggested that large road maps could be painted on billboards at each tourist camp. They could be electrically lighted and made a great convenience to the tourist as well as of great advertising value to the Independent jobber. The membership was quite enthusiastic over this map idea and authorized its officers to go ahead and see what could be done.

This tourist camp business, Mr. Coryell said, was getting to be a bigger factor all the time. He had at a number of times counted as high as 150 cars parked of an evening at the tourist camp at Lincoln.

Getting newspaper publicity was discussed. The best suggestion made was to keep in friendly contact with the

local editor and buy some advertising space with him and whenever an oil company thought it had a news story, to write that news story out and send it in.

Canvassing Home Trade

The point was made that many Independent jobbers do not work their home trade and territory the way outsiders do—that if the Independent jobber paid more attention to his own district there would be less opportunity for outside companies, that is, companies outside of the territory and even outside of the state, coming in and selling products. Proper handling of local trade will keep outside salesmen out and also their stations.

Mr. Bilby testified to this last point, saying that this summer he had driven over a good part of his corner of the state looking for towns in which to put in stations, but they were so full of equipment and bulk stations that he passed them up. There were towns, he said, that were so full of curb pumps that had gone in with a bulk station, he would in addition have had to replace that equipment and the expense and investment would have been too much, so he didn't go in.

He urged the jobbers not to duplicate equipment—not to do what other companies don't do in the way of giving special favors. He condemned the practice of giving away equipment to rock crushers and others who did not resell.

Handling Tank Wagon Drivers

Various members said that tank wagon and truck drivers should not be given authority to meet an alleged cut, in price from a competitor, but should be instructed when they are told of an alleged cut, to phone their home office at once.

Opinion was expressed that a great deal of the customers' talking about a competitor having offered a lower price is just talk to get the tank wagon drivers to cut their price. In all cases, these men said, the drivers should be instructed to ask to see the other man's tankwagon ticket and then phone the home-office.

Some asked if a jobber had the right to refuse to sell gasoline to a garage man who was cutting the price. The opinion was, that he did have that right. It was said that ordinarily it could be taken as true that a garage man cutting the price did so with the full knowledge and even consent of the oil company that was supplying him with the goods.

Mr. Coryell pointed out considerable trouble in some parts of the state over the zone system of pricing. These zones were laid out in the days of mule-teams and tankwagons. Now trucks are daily driving through two and three zones and it was very difficult for a truck driver to keep track of the change in the price. Gradually it appears, however, that these zones are being adjusted to movement of goods by truck.

Refiners are going to be asked to send distillation sheets along with their invoices, so as to serve as a check on the state's inspection department.

Talk Telegraph Code

There was some talk of the possibility of the association getting up a telegraph code for the transmission of information on prices between the refiner and jobber.

Attention was called to the existence of the McClure code but it seemed that practically no one was using it. The opinion was expressed that a code should be used, not only to keep prices confidential, but to cut down telegraph cost.

Increasing Sales

Ways to meet the national brands of lubricating oils were discussed. One dealer with stations always priced his own brand of lubricating oil—and he saw to it that it was a premium oil—at 5 cents a gallon higher than the national brand which he felt it necessary to carry. Then when the national brand was called for, he would say—"yes, we have it, but here's another oil which we sell for 5 cents more a gallon"—and generally the man would buy it.

Another dealer has cut the price of the national brand a few cents below the price of his own brand.

Mr. Bilby said never to give away anything with what is sold. He keeps a mailing list on an addressograph machine of all the automobile owners in his territory and every once in a while sends them a letter, but once a year he sends them a letter enclosing a coupon, good at any time, at any of his stations, for a half gallon of motor oil. This with his compliments. It isn't given away in connection with the sale, but is just a distribution of samples.

Oil-Gasoline Ratio

It was brought out that the average Nebraska dealer is selling one gallon of lubricating oil for every 25 gallons of gasoline, although some are selling as high as one gallon of oil to every 17 gallons of gasoline.

President Nicholas, of the National Petroleum Marketers' Association, said that the Independent jobbers were unnecessarily afraid of the advertising back of the national brand, that an investigation showed that only one out of every 20 automobile owners asked for a national brand and then not more than one out of 50 insisted upon having it.

If the jobber cashes in on the confidence that his customers have in his gasoline, he can sell them the lubricating oil.

The jobber must drive harder on his tourist business, not only for lubricating oil but for gasoline. President Coryell said that an investigation in Nebraska showed that 68 per cent of the tourists traveled on Standard Oil gasoline, while the Independent jobbers of Nebraska did over 66 per cent of all the gasoline gallonage in that state, showing that the Standard is getting a disproportionate share of the tourists' business.

President Nicholas, of the National Petroleum Marketers' Association, talked in the afternoon on the value of association work and the necessity for more harmony in business. It was a composite of his talks at the Ohio Jobbers' meeting and the American Petroleum Institute's meeting at St. Louis.

W. C. Platt, president of **National Petroleum News,** talked on the strength of the Independent marketer—that he is operating with less overhead and is in more direct contact with his organization and his customers than the big companies—that the jobber by an intense cultivation of his own organization and his own territory can not only greatly increase in numbers but greatly increase in individual strength.

Michigan Jobbers Plan Fuel Oil Program

JACKSON, MICH., Dec. 22.—Formulation of policies and plans to promote the sale of fuel oil for use in home and apartment building heating plants and for industrial purposes, will be taken up at the convention of the Michigan Independent Oil Men's Association to be held Jan. 15 and 16 in the Pantlind hotel, Grand Rapids.

Oil burning manufacturers, steam fitters, architects and builders, combustion engineers, apartment house owners, insurance men, fire marshals and industrial plant operators have been invited to the afternoon session of Jan. 16 when all phases of the fuel oil field will be discussed.

It is the hope of the association to develop a real constructive program of co-operation among the industries which might be interested, said H. H. Ragle, president of the association.

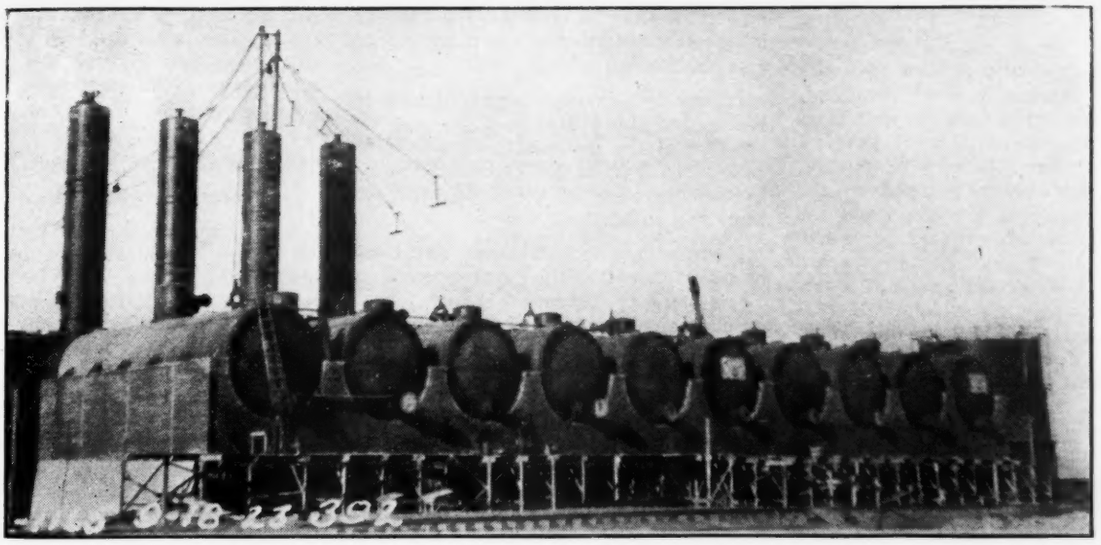
S.O. Director To Visit Childhood Home

Staff Special

CHICAGO, Dec. 24.—T. J. Thompson, a member of the board of directors and general manager of sales of the Standard Oil Co. of Indiana, will sail for England on Dec. 28, on a two-months vacation, and will visit his birthplace, Glossop, Derbyshire, and other cities in the British Isles.

Mr. Thompson came to the United States as an immigrant when only nine years old. This will be the first visit to his native country since he left it. While away, he will also visit Manchester, Derby, Edinburgh, Glasgow, Belfast and London. He will be the guest of honor at luncheons and dinners at some of these cities.

Mr. Thompson has been with the Standard Oil Co. of Indiana for 40 years, starting as a tank wagon driver in Grand Rapids, Mich.



Making The Refinery Show A Profit By Reducing Operating Costs

By Paul Truesdell

STAFF REPRESENTATIVE

Article 4-- Utilizing Countercurrent Flow Of Hot And Cold Materials

CLEVELAND, Dec. 21

SOME ancient sage whose name is forgotten once pointedly exposed to the world the fallacy of "saving at the spigot and wasting at the bunghole." Perhaps the spigots and bungholes that he had in mind pertained to containers for something other than oil but there is no use in going into that.

Anyway, what he meant was that there was no point in keeping the eye glued to the spigot to arrest the comparatively small and infrequent drops that might leak out there, while neglecting to watch and stop the stream that was running to waste from the larger opening. Something like the straining-at-a-gnat-and-swallowing-a-camel stuff.

There are no spigots and no bungholes to speak of around the average refinery but maybe the old wheeze fits in just the same in some phases of refinery operation. For instance:

Refinery experts generally agree that outside the efficient burning of the fuel itself so that the maximum number of heat units are extracted and put to useful work, the greatest opportunities for increasing efficiency and reducing operating costs lie in cashing in to the greatest extent on the possibilities of the principle of countercurrent flow of materials to be heated against materials to be cooled.

Just Heating And Cooling

There are plenty of both in every refinery. In fact the main part of refinery operation is heating oil, vaporizing it and then cooling and condensing it so there are vast possibilities to be realized from making, as the saying is, one hand wash the other.

Deep study is now being given by the refining industries to these possibilities and it is realized that the surface has so far only been scratched. One of the most important developments that is coming along right now is the more general installation of pipe stills for crude distillation to replace shell stills. The pipe still has long been in use by the companies topping Mexican and California oil but it is only recently that its use for handling all kinds of crudes has been widely considered by the refining world in general.

It is not unlikely within the next few years, as new plants are built or old ones remodeled, the pipe still will largely supplant the shell type because of its superior efficiency. Whereas in the shell still only a comparatively small amount of the oil is in direct contact with the bottom sheet to which the heat is directly applied and the remainder of the oil has to be heated by conduction, in a pipe still practically all of the oil is in contact in its course through the still with the hot gases, thereby heating more quickly to the vaporizing temperature and much more effectively stripping the heat from the flue gases.

The general construction plan of the pipe still is well understood. Roughly speaking it consists of two oblong well insulated brick boxes, rather narrow and nine or ten feet high, connected at the top by a narrow flue. One of the boxes is the furnace and the other is filled with vertical coils of three or four-inch pipe.

The products of combustion rise and pass through the narrow flue at the top into the pipe coils. A system of baffles deflects the hot gases back and forth from one side to the other, following the coils to the bottom of the still where the gases pass, pretty thoroughly cooled, into the flue leading to the stack. And while the products of combustion are flowing downward among the coils, the crude is being pumped upward through the coils to meet the heat.

The highest efficiency is obtained by bringing the hottest oil in contact with the hottest gases and the coolest oil in contact with the gases at their coolest point. This is accomplished in a pipe still by pumping the crude in at the bottom where its first contact is with the outgoing gases that have been robbed of most of their heat in their downward course, by its transfer into the upward passing oil.

The nearer together the temperatures of the two materials, gases and oil, are, within certain limits, the greater will be the absorption of heat. Warmed in its upward passage through the coils by the constantly increasing temperature of the gases, the oil reaches the top of the coil at a very high temperature and there meets the hottest products of combustion coming over directly from the furnace. The oil on the way up, virtually wrings the heat out of the gases which will pass out of the still and into the flue at a temperature of probably not much more than 300 deg. F., showing that their work has been well done and that there

is a minimum of heat going to waste up the stack.

The same principle applies to boiler feed water heaters and to heat exchangers designed to pass the heat from the fuel being pumped from the last still of a continous battery to storage, into the crude being pumped to the first still except that in those cases the heat transfer is from liquid to liquid. Very often these heat exchangers are made merely of an old still and a few coils of pipe and their efficiency is gennerally low. H. S. Bell in his book, "American Petroleum Refining" says that the heat transfer from most of such devices is only about 17 per cent, but it is likely that at some plants considerably higher efficiency than this has been achieved.

Any Saving Worth While

At any rate, whatever heat from the fuel oil can be transferred to useful work instead of being dissipated into the air and wasted, represents that much of a saving, because the fuel oil must be cooled before it is safe to run it into the storage tanks. And of course the hotter the crude is when it enters the still, the less the strain on the still and the less fuel it takes to accomplish the distillation.

There are various types of patented heat exchangers on the market designed to increase the efficiency of the heat transfer considerably over the ordinary rough and ready exchangers made by refinery boiler makers and pipe fitters.

But to get back to this spigot and bunghole proposition.

Assuming that the refiner is using a good fuel and that he is burning it efficiently as far as proper firing, proper draft, and other factors are concerned, the possible air leaks in boiler settings and similar defects may represent the spigot. True, there is great possibility of leaks there and the spigot needs watching but not to the exclusion of the rest of the refinery operations.

Here is about what happens. The refiner burns fuel to heat the oil and distill off the various products. Having vaporized them, he proceeds to burn more fuel to run pumps to convey water into the condenser boxes to dissipate into the water the heat he has spent money to generate. Then he burns more fuel to dissipate the heat from the condenser water into the air by pumping the water through expensive spray nozzle equipment into an expensive cooling pond arrangement.

Costs Money Both Ways

This heat not only does the refiner no good, except in some cases where boiler feed water heaters are rigged up to take heat from the heavy oil lines in the condenser boxes, but it actually costs him good money to get rid of it after he has spent good money to raise it.

Thus it appears that the stages in the refinery operation that begin when the vapors leave the vapor dome of the still and end when the finished product is pumped into the tank car for shipment, represents the bunghole. It is a big bunghole through which a mighty sizeable stream can trickle.

It is easy to lose between the vapor dome and the loading rack, all the benefits of the increased efficiency that have been gained by careful attention to the operation of the fires, still settings and so on.

Right here it should be said that these remarks do not apply by any means to all refineries. There are many plants, of course, operated at a very high degree of efficiency. Neither should this be taken as meaning that the water-cooled condenser can be done away with. But it is apparent that at some stages of refinery operations coming within the scope mentioned there are possibilities of making savings that may mean the difference betwen black and red ink entries on the balance sheet. And any savings that can be made are certainly worth while, provided they can be made without an outlay for new equipment that the refiner cannot afford.

In the next article of this series, which will appear in an early issue, the subject of heat exchange and re-running by means of tower equipment will be taken up in detail giving the experience of one company that has gone far in perfecting this comparatively new phase of refinery operations.

The article will be illustrated with detailed drawings of the towers by which preheating and re-running are being accomplished and the towers will be described in detail. —Editor.

Enslaving the B. T. U.

To get the greatest possible yield of products out of the crude he runs at the smallest operating expense for fuel and other factors and by the use of the smallest possible investment in ment is the golden text of the refiner's religion. The more labor he can squeeze out of every British thermal heat unit that his furnaces develop, the nearer he can come to realizing his ambition.

The refiner who can turn out as great a quantity of products from 10 stills as his competitor gets from 12, is beating the other fellow in the game, other things being equal. Preheaters, superheaters and economizers in the flues can effect a great saving but they only answer part of the problem.

Fractionating and dephlegmator towers, properly designed, are the greatest help in making it possible for the refiner to get the greatest output from his still equipment at a minimum fuel cost.

The principle of tower operation is exactly the opposite of the principle of still operation. Where the purpose of a still is to distill fractionally the products of various gravity in the crude, the province of the tower is to condense those products fractionally.

Tower Knowledge Increasing

Comparatively little is known in the oil industry about towers, but more is being learned every day because every refiner in the business realizes that development of towers and their uses has only begun. Various sorts of towers, especially the so-called bubble tower, have been highly developed for years in the alcohol industry but the problems presented in that industry are simple compared with those faced by the oil refiner.

In the alcohol industry the problem is merely one of separating two materials, alcohol and water, each having a constant uniform boiling point. In oil refining the problem is to separate unnumbered products each having an unnumbered chain of boiling points. So complex is the structure of oil that a sample taken from the stream coming off a still, say at a temperature of 250 F., will not vaporize uniformly at that temperature but will have a chain of boiling points of its own when it is put through a distillation test.

When oil refiners began to experiment with towers there were no rules for guidance as to how large or small a tower should be for a certain sized still or for a certain rate of evaporation. There are no such rules now, either. The art has been built up purely by experiment, trial and error and what any refiner knows about towers today is what he has found out for himself by laborious experiment and study. Here are some of the things it has been found that towers will do in the way of effecting economies:

1—Minimize re-running of products, which means double fuel cost, by getting a better separation of products on the first run.

2—Making greater output possible from a given number of stills by enabling the refiner to fire his stills harder and still get a good separation.

Lightening Boiler Load

3—Taking some of the load off the condenser and consequently off the boiler by reducing the pumping of water into the condenser boxes. Refinery boiler plants usually are badly overloaded.

4—Taking still further advantage of the countercurrent flow of hot and cold materials where the latest type of towers are used, and making the fractionating tower practically a re-run still as well. Details of this method will be given in the next article.

There are various types of towers in use now, almost as many kinds as there are refineries and they vary in efficiency just about as widely as they vary in design. But the fact remains that al-

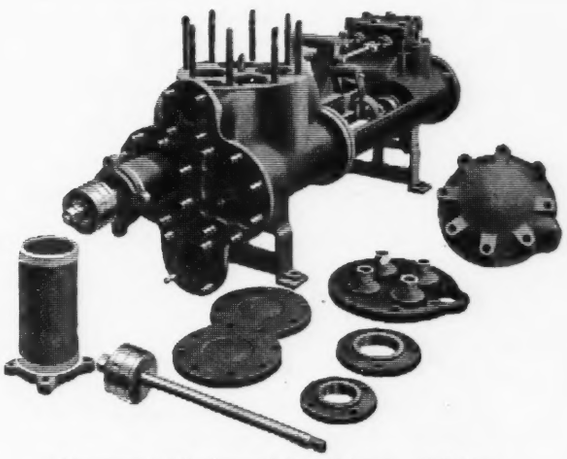
(Continued on page 28)

REFINERS!

IN the early days, long before the dissolution, as pump purveyors to the old Standard Oil Company, we developed and furnished in large numbers, a pump especially adapted for refinery service.

The first of these pumps went to the Eagle Works of the Standard Oil Co. of N. J., and we, therefore, called it our

EAGLE WORKS TYPE



Disassembled view of the 7½ x 5 x 10" size.
Made in all sizes from the 6 x 3 x 6" to the 10 x 7 x 12" for 200 lbs. working pressure.

For a universal refinery pump, there is nothing to date that quite takes it's place. Made very simple, as a refinery pump must be, there is nothing much to describe or feature, except the fact that it has either cast iron, or cast bronze cylinder liners, bolted in — easily accessible and easily removable. Steel or bronze piston rods, and cast iron or bronze fluid pistons.

The valve equipment consists of bronze screwed seats, bronze valves, bronze stems screwed into the seats and bronze springs. Rubber valves may be ordered in place of bronze.

Bulletin 101 on these pumps on request

NATIONAL TRANSIT
PUMP AND MACHINE COMPANY
OIL CITY, PA.

District Offices: New York Pittsburgh Cleveland Philadelphia Kansas City Denver Houston

MID-CONTINENT REPRESENTATIVES

Frick-Reid Supply Co., Tulsa, Okla. E. L. Wilson Hardware Co. Beaumont, Texas
Globe Supply & Machinery Co., New Orleans, La.

Advertising Puts Over New Benzol Blend

BALTIMORE, Dec. 20.—Newspaper and outdoor advertising has put over Interocean "Govoline" motor fuel in Baltimore since April 1. Until last spring Interocean was merely a name in this territory but since then it has come to stand for one of the large distributing companies.

Interocean "Govoline" is a benzol blend made by the Interocean Oil Co., a subsidiary of the United States Petroleum Corp. which operated a 1000-barrel refinery on the Baltimore waterfront, charging Mexican crude. The company did not engage in retail business until last spring but since that time has built 20 service stations and is continually adding links to the chain.

The company procured advantageous positions for its billboards, and on July 17 first advertised and put on sale its new benzol blend named after the president of the company, R. R. Govin.

The newspaper advertising consisted of reason-why copy which told what the blend was and the advantages in using it. The campaign was directed by Harold F. Brown, sales manager of the Interocean.

Assigned Car Order Again Held Up

By Special Correspondent

WASHINGTON, Dec. 24.—The assigned coal car case, in which the oil industry's private tank car is indirectly but gravely involved, is again under formal consideration by the Interstate Commerce Commission. The operative date of the order abolishing the assigned car has been postponed until April 1, the beginning of what is known as the coal year, so as to give the commission time in which to consider whether it will or will not modify its order, issued last June to be effective Sept. 1 and postponed six times since then.

Three days of argument on the law and the facts have just been completed. Nearly all the lawyers advocating that the order be left unchanged took the flat-footed position that the private car has no legal right of existence because it is the duty of a railroad to furnish all the vehicles needed for the transportation of commodities it holds itself out to transport.

Just as insistently opponents of the order argued that the law sanctions the use of the private car to the limit, so long as its use does not absorb the general facilities of the railroad to such an extent that cars owned by the railroad cannot be moved. They admitted that in time of car supply shortage, the private car was not entitled to any more than its proportionate share of the locomotives and tracks of the common carrier railroads.

But, they said, the testimony did not go to show engine or track shortage. It went, they said, to support an allegation that because mines to which cars were assigned, for railroad fuel, or for fuel for steel plants owning the cars, the mines not having business of that kind were discriminated against in the sale of coal to such an extent they could not compete with the assigned car mines for a dependable supply of labor.

Market Transactions In Mammoth Explained

WASHINGTON, Dec. 24.—Another small sensation took place in the Teapot Dome inquiry four days before Christmas when Jesse L. Livermore, stock broker said he received $9,916 for selling 109,000 shares of Mammoth Oil Co. stock and re-purchasing a little more than $10,000,000 worth, the re-purchase having been made for the account of Harry F. Sinclair who was dissatisfied with the state of the market created for the stock. Livermore testified that he was one of a group of brokers to make a market for the issue of no-par stock for which bids were received for 150,000 shares, 109,000 being allotted to the bidders.

The thing in the transaction that amounted to a fly in the ointment, from the Sinclair point of view was the fact that many of the subscriptions came from professional traders whose only interest, as Livermore said, would be to sell the stock if they saw a margin of profit or to drop it if they detected any evidences of a break. Sinclair, Livermore said, was opposed to having the stock in hands where it might be used as a football to be kicked about and in that way discredited. Therefore Sinclair gave orders to buy it back. Sinclair bought back at prices ranging from $40 to $56.50. He said the re-purchase was not altruistic but a move to inspire confidence in the stock among those not interested in buying and selling on small margins of profit or loss, that is, the professional traders. To prevent the starting of a runaway market during the process of recovering the stock for stabilization purposes, the witness said he also sold some stock.

Senator Smoot called his attention to the fact that his record showed that he had bought more shares than had been issued. Livermore explained that he did not regard the transaction as evidence of a genuine short interest, but as evidence that some insider was selling short against stock he had in his deposit box.

Livermore protested against reports circulated about him to the effect that he was avoiding service of the subpoena calling on him to testify. The deputy United States marshal entrusted with the subpoena made a return thereon to the effect that after diligent search he had not been able to find Livermore. The witness said he followed his routine during the entire period the marshal was supposed to be looking for him; that his home address was shown in the city directory and that inquiry at any brokerage office or bank would have resulted in his being found within an hour. The first he knew he was wanted, as a witness he said, was when he read a note to that effect coming over the ticker wire which also informed him that he had been evading service.

Mrs. Brockway Better

WARREN, PA., Dec. 22.—Mrs. George P. Brockway, wife of the president and manager of the Seneca Oil Works here, Dec. 21 was reported by Mr. Brockway as improving nicely from a severe abdominal operation, Dec. 6. Her condition is still critical but her continued recovery is expected. Mrs. Brockway was operated on by Dr. E. G. Drew and his two assistants from Philadelphia. The Brockway home at North Warren was turned into a hospital, so the patient would not have to be moved from the city.

New Export Rates Help Refiners

WASHINGTON, Dec. 24.—A small measure of relief for the distressed refiners in north Texas and southern Oklahoma has been given by the Missouri-Kansas railroad through the publication of rates of 20.5 cents from north Texas and 22 cents from south Oklahoma groups to New Orleans and other Louisiana ports, when the oil is for export or coastwise movement.

The rates are due to go into effect about Dec. 27. The Interstate Commerce Commission assented to the reductions being made on less than the statutory notice of 30 days. The railroad was authorized to make the reductions on 10 days notice. The reduction ranges from 2½ to 5 cents per 100 pounds, although it is dangerous to set such limits because rates from those points are in a chaotic condition and a careful check of the tariffs might show the limits to be erroneous.

Generally speaking, however, the reductions made it possible for the northern Texas and southern Oklahoma shippers to broaden their market by including the Louisiana ports instead of being confined to the Texas ports.

As rates are arranged now the ships touching at Texas ports are the only ones available for carrying away the oil. By opening the Louisiana ports the Texas and Oklahoma producers will be able to make tenders to companies sending their ships to those ports.

George T. Atkins, traffic manager for the Katy, in asking for permission to publish the rates on less than the statutory time, said the general rate situation in that part of the country was being revised but that conditions in north Texas and south Oklahoma were such that the shippers could not wait for the revision to be completed.

He said the reductions proposed could be made now without waiting for the rest of the rate check needed to complete the revision, and that is why he told his tariff publishing agent to ask for permission to extend the relief now.

THE EDITORS' VIEWPOINT

In Up-To-Date New York

NEW YORK CITY, while considered the most advanced in many respects, is now about to take a laggard step to something the whole country has long since adopted—permitting tank trucks and wagons to operate on its streets.

Ever since the beginning of the oil industry, New York, with some queer streak of mental shock, has held that tank wagons introduced a distinct fire hazard, and required all gasoline and kerosene sold on Manhattan Island to be delivered from steel drums. The oil industry has called the city's attention to the extreme costliness of this method time and time again. It is estimated that at least two cents a gallon is the extra cost of handling gasoline and kerosene in this fashion and the industry has thousands of times tried to show the New York fire officials that this is the most hazardous way that the gasoline and kerosene could be handled.

Just imagine, the system the New York people have insisted on, which requires filling up a truck load of steel drums, carting them over the city to a place where maybe the whole truck load is going to be dumped, so far as contents are concerned, then drawing the bung, unscrewing the vent-plug and rolling each drum over a funnel leading to an underground storage tank and sitting around and waiting while the gasoline bubbles out.

You never could tell the New York fire authorities anything about the fire hazards of this. They considered it safe, because in their urban ignorance they still thought along the lines of some of these college professors who have talked about how a gallon of gasoline has an explosive force of so many thousand tons or maybe it is millions of dynamite, neglecting to state the necessary things which must be done in highly scientific fashion in order to make that gasoline explode.

But now the acting mayor of New York has discovered this fire hazard of wholesale delivery from barrels and has suggested to the board of aldermen of the city that tank wagon deliveries of petroleum products be permitted on Manhattan Island. New York City has undoubtedly paid millions of dollars for this excess cost of delivering gasoline, due to the ignorance and obstinacy of its fire authorities.

Appeals To Good Taste

HOW few of us realized, even say five years ago, the possibilities in advertising petroleum products to the public. Refined oils, gasoline and kerosene particularly, seemed such prosaic, matter-of-fact commodities around which to create the atmosphere that enters into the advertising of some commodities, such as clothing, furniture and most all kinds of household fixtures.

But the writers of clever and sound advertising copy of the country have developed an appeal to the general reading public, those of us in the oil business itself failed to appreciate. They have carried the story of gasoline into the home by picturing it as a well-laid grate fire, a chain of links of even size and strength, a row of standing dominoes, one of which given a push toppled the whole row, and so on. They have educated the motorist to change his oil every 500 miles.

Now comes the latest phase in popular advertising of oil products, at least as far as the writer is concerned, the use of the appeal to the very human desire to comply with the demands of good taste and the prevailing social standard.

The Atlantic Refining Co. has developed this appeal in its holiday advertising of candles. It is carrying copy in such magazines as Good Housekeeping, sandwiched in with ads for Haviland china and Towle Silver. "The well-appointed home", its copy starts out in caption type halting the eye. "Decorating authorities all agree that the appointments of the well-ordered living room, dining room, library, boudoir or reception hall of today must include—CANDLES.

"Tradition suggests them. Fashion prescribes them. Good Taste demands them. And Good Judgment says use Atlantic Candles. Then you'll be sure to get candles that are correct—the latest creations of the authoritative designer's art. There's a shape, size and color for every lighting or decorative scheme."

The effect of the copy is heightened by a photograph of a corner in the well-appointed room with a fetching candle also of what is probably the latest design and wax candles of what is known—so we are informed by the copy—as a Taper Twist.

We'll wager that more than one housewife who heretofore has not included candles in her plans for holiday entertaining will figure them in this year and be happier, in so doing, in the knowledge she is recognizing the dictates of good form.—V. B. G.

Some of the daily press comment upon oil is entertaining. One of the best of the recent nifties said that Prairie might take over Cosden and thus become a strong factor in the manufacture of asphalt in Wyoming. Then more good fortune was handed out to Prairie in the statement that it would become closely affiliated with the Ohio Oil Co. and thereby attain as strong position in Wyoming as the Standard of Indiana holds. Well, Salt Creek, which is the big end of everything out there, has potential developed production of 150,000 barrels now and of this the Midwest, hence the Indiana company, controls about 115,000.

Magnus Johnson, our new senator from Minnesota, says, in a published interview, "I want to see peace in the world. I am not for the League of Nations, or the world court, but I am for something, so we can send men or women to Europe to tell them over there that we want peace." That man learns quickly. All the politicians are for "something," if they don't have to define it too closely.

Secretary Mellon says the U. S. has paid $700,000,000 more on the public debt than it actually had to. My, we never realized before how old fashioned our government is. Paying up one's debts is hardly done now.

When your wife complains about Towser's tracking mud over the floor tell her the burglary insurance companies make a reduction of ten per cent in the rate where a dog is maintained on the premises.

If this weather keeps on the coal miners will have to go out on strike earlier and stay out longer to get their business back to normalcy.

You can't tell the seasons any more by looking at a girl's feet, and cotton stockings seem to be only a memory of the dark ages.

More business men get tired out spending money at night than making it daytimes.

(Continued from page 24)

most any kind of tower is better than no tower at all, in the opinion of refiners who have studied the question. Taking up the points just stated one by one:

1—Where a refiner is striving to get the greatest output out of his stills the temptation is strong to fire them too hard. This means that the temperature in the still is raised high enough to reach the boiling point of some of the heavier ends and they are driven over with the gasoline vapors, making a distillate with high initial and endpoint. This necessitates re-running to bring the stuff within the specifications for motor fuel and that means practically doubling the fuel cost of making the product so the refiner is out instead of ahead from trying to run his stills too fast. Here is where the tower helps him out.

To Make Sharp Cut

2—The purpose of a tower is to let the light vapor go through and out at the top while it condenses the heavier vapors, either refluxing them into the still for further treatment or discharging them through the tailhouse as a separate product. Therefore, the refiner can fire his stills as hard as he likes, within the limits of excessive pitting on the still, and yet get a good separation in the tower, obtaining a gasoline that will not require re-running.

3—From the towers on the stills of a continuous battery, where the overhead product will be kerosene, and the condensate in the tower gas oil, this condensate can often be run direct to the tail house and into storage without passing through the condenser at all, if heat exchange is provided for.

4—Where tower installations are arranged two towers to a still and are insulated, the first tower can be cooled sufficiently to condense the heavier ends by pumping crude oil or whatever the charging stock of the still is, into the top of the tower cold. This serves the double purpose of condensing the heavy material in the tower for reflux and heating the charging stock so that the heat is exchanged from the product where it is not wanted to the product in which it is wanted with a minimum of loss.

In the same way, a cold heavy naptha can be pumped into the top of the second tower, to meet the rising vapor. The result of this meeting is that the light vapors pick up the lightest fractions of the naptha and the heavier ends of the naptha pick up the heavier ends of the vapor effecting practically a re-running of the naptha with the waste heat.

In a previous article of this series it was stated that the rate of radiation of heat from a vessel into the air was in direct ratio to the difference between the temperature of the contents of the vessel and the temperature of the atmosphere. The higher the temperature of the contents of the vessel in comparison with that of the outside air, the greater the radiation of heat will be.

It is on this principle that the ordinary uninsulated tower operates. In order to effect condensation in the tower three things are necessary.

1—To slow up the rate of flow of the vapors.

2—To cool the temperature to the point of condensation.

3—To offer a surface upon which the vapors can condense.

In the first place, when the vapors are discharged from the 10 or 12-inch vapor line into the bottom of the tower the diameter of which is preferably about five feet, the rate of flow is, of course, slowed up materially.

The vaporizing temperature of the gasoline vapors is low and therefore there is not enough difference between the temperature of the vapors and the temperature to which the outside air cools the tower, to condense them. They go on to the top of the tower and pass out through the vapor outlet, either in to another tower or into the condenser direct.

The heavier fractions, having a higher boiling point and consequently entering the tower at a hotter temperature than the gasoline vapors, are cooled to their condensing point by the cooling action of the air on the sides of the tower, because of the greater difference in temperatures. Their velocity of flow slowed up, and their dew-point temperatures being reached, all that is necessary to bring about their condensation into liquid form is a surface against which to impinge.

The walls of the tower, of course, furnish some surface but it is generally found advisable to put baffles in the tower, at various points to make condensation more effective and complete. Some towers are filled with specially made earthen tiles of various sorts, some of them small circular sections with holes through the center.

Other towers have a perforated baffle reaching across the tower some three or four feet from the top and the space between the baffles and the top of the tower filled with broken fire brick or similar material. The purpose of all these filling materials is merely to afford the greatest area of surface to aid the condensation of the heavier ends.

While some refiners are strong for the tile and broken bricks in towers, others have found them more or less unsatisfactory. It is said that some of the tile fillings, especially the sections with center holes, are likely in course of time to become clogged with carbon and other deposit so that the flow of the vapors through them is impeded.

Towers with no other fittings than three or four baffles have been found satisfactory in many plants.

One of the first warnings that any refiner who has had experience will give anybody contemplating the use of air-cooled towers, is not to make them too small. Experience has shown that such towers should be not less than five feet in diameter and 25 feet high. Two reasons are given for this. First, if the towers are too small the rate of flow of the vapors is not retarded enough to give good condensation, and second the area of the towers exposed to the air is not sufficient to cool the heavier vapors to the proper point. A third possibility of too small a tower is that sufficient surface may not be afforded to effect complete condensation of the heavier fraction.

All towers, of course, have a reflux line at the bottom through which the condensate may be either returned to the still or flowed through the condenser or direct into the tail house.

Condensing of the vapors is governed by the same principle that causes the formation of rain drops. It is well known that at the center of every drop of rain there is a grain of dust. The grain of dust forms a surface or nucleus around which sufficient moisture condenses to form the drop. Were there no grains of dust in the air the rain would come down in the form of a mist. To the vapor in the tower, cooled to its dewpoint, a surface against which it strikes, serves the same purpose as the grains of dust to the falling moisture and immediate liquefaction is the result.

If the surface offered by a small tower is too little to permit all the heavy vapor to reach it, some of the heavy stuff will be carried over in vapor form.

On the other hand, if the tower is too large, or too many towers are used on a still, some of the advantages are lost because refluxing of too much material will put an undue burden on and shorten the life of the still.

But there is an almost infinite variety of ways in which tower equipment can be used. Sometimes none of the heavier stuff that condenses is trapped back into the still but instead two or even sometimes three streams are taken off the tower directly through the condenser and into the tailhouse.

Where an excessive amount of condensate is not refluxed into the still there is no limit to the number and variety of towers that may be used on one still except the expense of constructing them and the room to put them. Of course, a large number of towers for one still would not be economical.

All that has been said about towers in this article applies only to towers for use on straight distillation stills and not to cracking stills. Because of the fact that the pressure used on cracking stills makes the boiling point of the material much higher than in straight distillation without pressure, a very much smaller tower will give the desired results on a pressure still than is necessary on a still operating at atmospheric pressure.

This is because, as before stated, the greater the difference between the temperature of the vapor and the temperature of the outside air which cools the towers, the greater the rate of heat loss from vapor. Hence, the cracked vapors being very much hotter than the vapors coming from a crude still, very much less area of tower walls is required to effect sufficient cooling for condensation.

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The Insulation of Oil Storage Tanks
Causes of Evaporation

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OIL FIELD SUPPLY TRADE NEWS

Upturn In Pipe Market Expected; Companies Cover On Tin Plate

By Special Correspondent

PITTSBURGH, Dec. 24

THINGS appear to be shaping themselves in the tubular goods market for a decided turn for the better. As yet this improvement has not taken tangible form in large orders, except that one 1500-ton lot of oil country pipe was booked by a large pipe producer here for shipment to the Nippon Oil Co., Japan, through Takata & Co., New York. Several tentative inquiries are out, however, and various oil companies have indicated they will be in the market for line pipe shortly after the first of the year and the South Penn Oil Co., has asked for prices on 1500 tons of casing and tubing.

Pipe mill order books are lacking in backlogs of lapweld pipe which means the oil country sizes, but still have enough business in buttweld to finish the year in good shape, maintaining operations around 80 per cent as an average.

When last week a large oil interest placed its tin plate requirements for the first part of next year, a round tonnage for oil cans, the last of the oil companies joined the list of those who have protected themselves in this regard.

All thought of a reduced price in tin plate has disappeared and the $5.50 per base box, 100 pounds Pittsburgh price is the prevailing figure except on stock list plate which is offered at concessions in order to get it moving. Oil can sizes at times appear on these only to be quickly snapped up. The Standard Oil Co. of California recently inquired for 140,000 base boxes but is understood to have closed. A new inquiry from Japan for oil can size tin plate calls for 9500 boxes of 14 x 18 inch and 2800 boxes of the 10 x 20 inch for delivery to Yokahama.

Oil storage tank inquiries are rare and confined usually to lots of one, two or three tanks, involving at best 500 tons of plates.

A typical order went to the Riter-Conley Co., Pittsburgh, recently, for two tanks, about 600 tons for the Sinclair Refining Co., at Trennley Point, N. J. Bids on 600 tons for tanks for the Mare Island navy yard are in, but action has been postponed until Jan. 16, 1924.

From 2.85 cents to 2.90 cents a pound is quoted on plates on the Pacific coast. The Pittsburgh base price stands unchanged at 2.50 cents, Pittsburgh but in Chicago 2.60 cents, Chicago mill prevails. At that point, too, buying is low but a Los Angeles fabricator is in the market for 2450 tons for tanks to be erected in California.

Fairly large plate tonnages are involved in recent awards of cars. The Texas Co., has ordered 10 narrowgage 6000-gallon tank cars from the General American Tank Car Corp.

The Gulf Refining Co., has been taking bids on about 500 tons of concrete bars for a building in Philadelphia. Concrete bars are selling regularly at 2.40 cents base Pittsburgh, but occasionally a concession develops below that figure where a seller wishes to liquidate a stock of bars he may have been holding for some time and which originally cost him much below the going market of 2.40 cents today.

Orders and Equipment

Equipment orders are occasionally placed but inquiries before the trade are fairly numerous, action on many of which will now be postponed until later in January.

The Atlantic Refining Co., Franklin, Pa., has ordered a 5-ton 43-foot span crane from the Northern Engineering Works, Detroit.

Equipment shortly will be ordered by the Standard Oil Co., of New Jersey, 26 Broadway, for the storage and distributing plant it is to construct with pipe line, pumping station, etc., in the vicinity of Cacalilao, Mexico, to handle the output of the Mexican Seaboard Oil Co., that city, with which it recently made a contract. The expansion will cost with equipment, in the neighborhood of $200,000.

Five buildings and a pumping plant to cost $170,000 with equipment are to be erected as a storage and distributing plant at 83 to101 East Peddie St., Newark, N. J., for the Tidewater Oil Co. 11 Broadway, New York. A service and repair building for the company's motor trucks also will be constructed to cost $50,000.

A refinery will be erected and equipped by the Great Lakes Refining Co., Toledo, O., at an estimated cost of $150,000.

A building at Montgomery, Ala., has been leased by the Gulf States Chemical & Refining Co., Birmingham, Ala. It will remodel and install machinery for a new plant to cost approximately $60,000 and later on will erect new works at that location. A. M. Kennedy is general manager.

Additional equipment is inquired for by the Middle States Oil Co., New Orleans for its refinery at that point to cost $75,000. J. D. Saklatvala is president.

Preliminary plans have been made for the construction of a pipe line by the Atlantic Refining Co., Beaumont, Tex., with pumping unit, to its storage plant on the Neches river. This improvement will cost at least $100,000.

Another pipe line is to be constructed by the Union Oil Co., Union Oil building, Los Angeles, from the Torrance oil field to its refinery at Wilmington, Los Angeles harbor, together with pumping station and auxiliary equipment.

Considerable interest of late has been shown in equipment by manufacturers of oil burners.

The Holtson Manufacturing Corp. 119 East York St., Baltimore, has recently been organized to manufacture oil burners and kindred products. It is in the market for iron castings, pressure tanks, iron pipe, fittings, etc. W. B. Holtson is president.

The New England Oil Burner Co., 20 Aborn St., Providence, R. I., has been organized to act as distributor of oil burners and kindred products. Willard W. Stearns is treasurer.

The International Derrick & Equipment Co., 186 East Broad St., Columbus, O., has been organized as a consolidation of the Columbus Structural Steel Co., the International Steel Products Co., and the International Derrick & Equipment Co. The new organization will manufacture and distribute oil, gas and artesian well drilling and pumping derricks and equipment. Harry M. Runkle is president.

The Davis Boring Tool Co., 3710 Forest Park boulevard, St. Louis, recently contracted with the Forest Spring Real Estate Co., St. Louis, for a new 2-story plant, 75 x 180 feet to cost $50,000, to be occupied under lease. C. G. Schorieh, Syndicate Trust building, St. Louis, is general contractor.

The Scientific Oil Burning Equipment Co., Ltd., Windsor, Ont., has been incorporated at $25,000 to manufacture oil burning furnaces, stoves, engines and motors, by Frank T. Goodwin, Detroit, James H. Clark, Lorne R. Cummings and others.

The Hardings Fuel Oil Heating Co., 23 East Congress St., Chicago, has been incorporated for $10,000 to manufacture and deal in oil burners and heating plants, by Edward P. Fahen, Robert E. Murphy and P. M. Murphy.

THE EVAPORATION THIEF

The best part of your gasoline or crude is being stolen from your tanks. Evaporation is doing it. The loss from this source in the United States is estimated to total at least $200,000,000 a year.

Every 55,000-barrel tank you are using for standing storage is costing you from $1,600 to $15,000 a year in evaporation loss, depending upon the grade of oil stored and the character of canopy roof. A Wiggins Floating Roof would reduce this loss under the same conditions to a range of $400 to $1,300 per annum.

These figures are for *standing* storage. They do not include the losses due to filling and emptying. On a working tank a canopy roof causes losses which are almost unbelievable to those who have not studied the results of tests made by the United States Government.

The following table tells why oil men are becoming keenly interested in the possibilities of the Wiggins Floating Roof to reduce their evaporation losses.

Certainly the oil men in this country will want to give careful consideration to the question of replacing existing roofs with the Wiggins Floating Roof and they will certainly want every tank inquiry they send out to come to us for a quotation on a Wiggins-equipped structure. To make it easy for oil men to readily acquire full information, we have prepared a bulletin giving detailed information. You may order your copy on the adjoining request slip.

Losses per Annum in a 55,000-Barrel Tank Handling 10,000 Barrels of Oil a Day

Kind of Oil	Loss in Dollars Based on Price of 10 cents a gallon	
	Vooden Roof with Gas tight Metal Sheathing	Wiggins Floating Roof
Gasoline, 58°	$27,300	$1260
Light Crude, 37-40°	16,400	840
Mid-Cont. Crude 33-36°	12,600	630

REQUEST SLIP

CHICAGO BRIDGE & IRON WORKS
2125 Transportation Building, Chicago

Please send me the Report on Fire Tests on Wiggins Floating Roof, and the bulletin to be ready soon.

Name .....

Title .....

Company .....

Address .....

250

CHICAGO BRIDGE & IRON WORKS

CHICAGO	NEW YORK	DALLAS	SAN FRANCISCO
2125 Transportation Building	3145 Hudson Terminal	1639 Praetorian Bldg.	1060 Rialto Building

HORTON Products include the 5 RING 55, 7 RING 80 and other tanks,
THE HORTONSPHERE
and Refinery Equipment

Huge Installation Of Foamite System

LOS ANGELES, Dec. 21.—Designed to serve as a protection for more than seven million barrels of crude oil storage the Foamite system which the Union Oil Company of California has been installing at its San Luis Obispo terminal is nearing completion under the supervision of Ralph J. Reed, the company's chief engineer.

The Foamite outfit consists of two 3000-barrel tanks for Foamite, and 5000 feet of 6-inch line, 5000 feet of 4-inch line, and 16,300 feet of 3-inch line. The company has at San Luis Obispo five immense concrete lined storage reservoirs and a great number of steel storage tanks. This tank farm serves as the concentration point for all of the crude oil which the company's pipe line system gathers up in the San Joaquin Valley fields for shipment from Port San Luis.

The first ground storage reservoir for crude oil ever put up in the west was built at San Luis Obispo fifteen years ago by the Union Oil Co.

Supply Trade Personals

TULSA. Dec. 22.—National Supply Co. is now erecting building for its new store at Wewoka. under suprvision of D. G. Mann, district manager at Okmulgee.

* * *

TULSA, Dec. 22.—W. A. Drake, of the Oil Well Supply Co., and formerly located in Ardmore, has been transferred to Wewoka, where he will have charge of the company's new store.

* * *

TULSA, Dec. 22.—S. C. Moss, of Independence. Kansas. credit manager for the National Supply Co.. is spending several days in the Tulsa office of the company.

* * *

TULSA, Dec. 20.—A. F. Cambell, Mid-Continent representative of the Fenwick-Reddaway Manufacturing Co., makers of Iwana hair belts, and T. C. Melrose, formerly of Columbus, Ohio, have purchased the Corona Hotel on south Boston avenue, and will take charge Dec. 1. Mr. Campbell will continue to sell the Iwana belts, and Mr. Melrose will be in active charge of the hotel.

* * *

TULSA, Dec. 21.—P. J. Shouvlin, of Springfield, Mass., representative of the Superior Gas Engine Co., is spending some time in Tulsa in the interests of his company.

* * *

TULSA, Dec. 22.—Luther Kennedy, geologist for the Douglas Oil Co., has returned to Tulsa headquarters after having spent a week in the Wewoka field.

* * *

Tulsa, Dec. 20.—L. G. E. Bignell, mechanical engineer with the Parkersburg Rig & Reel Co., has concluded a two weeks' visit to the company's main factory at Parkersburg. W. Va., and is back on the job again.

* * *

TULSA, Dec. 21.—Robert Rose, of the General American Tank Car Co., is spending this week in south Texas and Louisiana, cleaning up that territory before going to the Institute meeting in St. Louis.

Mid-Continent Refinery Operations Week Ending Dec. 15

Summarized From Current Reports Of The Western Petroleum Refiners' Association

Staff Special

TULSA, Dec. 22.—Stocks of gasoline in the Mid-Continent increased slightly during the second week in December according to the weekly report of the Western Petroleum Refiners Association. The increase was entirely due to the 39 reporting refineries in Texas which sold but 64.2 per cent of their production in the week. The remaining 91 plants in four states decreased their stocks to a certain extent.

Oklahoma refiners increased their runs of crude and rerun oils to stills 11 per cent during the week to a daily average of 126,332 barrels per day for the 57 reporting plants with a still capacity of 259,200 barrels. In spite of the increased level of operations the Oklahoma plants were able to cut their stocks of every product. Gasoline stocks were reduced .09 per cent, kerosene 5.9 per cent and fuel and gas oil 1.21 per cent.

Kansas, Louisiana and Arkansas refiners cut their runs slightly and kept sales in advance of production while Texas refiners increased their runs 7.8 per cent and added to stocks of gasoline and fuel oil. Stock figures on kerosene are not available again this week due to an error in telegraphic transmission of the previous week which has not been corrected to make the report balance.

Taking the entire field with its 130 reporting plants with a capacity of 496,850 barrels per day, crude runs were increased 5.8 per cent, gasoline stocks increased 1.9 per cent, kerosene stocks were cut 5.4 per cent and fuel oil increased 3.4 per cent.

The following table consolidates the report of the activities of the 130 plants:

	Kansas	% Change over previous Wk.	Oklahoma	% Change over previous Wk.	Texas	% Change over previous Wk.	La-Ark.	% Change over previous Wk.	Total	% Change over previous Wk.
Number Plants	23		57		39		11		130	
Daily Still Capacity	81,900		259,200		129,650		26,100		496,850	
Crude and Rerun to Stills Wk 12/15	275,456	—11.7	884,325	+11.0	846,528	+ 7.8	98,819	—11.3	2,105,128	+ 5.8
Stills Wk 12/8	312,042		790,957		784,878		100,159		1,988,036	
GASOLINE										
Stocks 12/8	5,889,272		60,721,319		30,927,586		1,589,090		99,127,267	
Production 8-15th	3,913,701	— 4.84	12,401,722	+12.18	6,554,612	+ 7.57	936,978	— 3.73	23,807,013	+ 7.07
Sales 8-15th	4,111,800	— 6.80	12,454,293	+ .89	4,207,159	+ 5.96	1,069,327	+16.56	21,842,579	+ .92
Stocks 12/15	5,691,173	— 3.36	60,668,748	— .09	33,275,039	+ 7.59	1,456,741	— 8.33	101,091,701	+ 1.98
% Sales to production	105.0%		100.4		64.2		114.1		91.7	
KEROSENE										
Stocks 12/8	2,346,116		10,139,824		*		271,087		A 12,757,027	
Production 8-15th	1,201,652	—10.14	4,045,931	+24.64	1,952,726	*	331,521	+ 1.40	7,531,830	+11.16
Sales 8-15th	1,206,284	—13.78	4,646,335	+75.35	*	+ 4.69	420,580	+32.58	A 6,273,199	A +43.68
Stocks 12/15	2,341,484	— 0.20	9,539,420	— 5.92	*	*	182,028	—32.85	A 12,062,932	A — 5.44
% Sales to Production	100.4		114.8		*	*	126.9		112.4	
GAS AND FUEL OIL										
Stocks 12/8	9,886,209		47,181,215		38,049,600		2,655,670		97,772,694	
Production 8-15th	5,212,116	— 6.42	14,280,276	— 2.0	17,857,410	+11.53	1,753,343	— 0.30	39,103,145	+ 3.14
Sales 8-15th	7,459,247	+25.13	14,853,305	—26.22	11,619,266	—47.61	1,814,708	— 4.02	35,764,526	—28.74
Stocks Dec. 15	7,639,078	—22.73	46,608,186	— 1.21	44,287,744	+16.39	2,594,305	— 2.31	101,129,313	+ 5.43
% Sales to Production	143.1		104.0		65.1		103.5		91.4	

A—Texas not included.
*Not shown, due to investigation of reports.

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1885 — 1924

1924 *The Calendar of GET-AHEAD* 1924

JANUARY.

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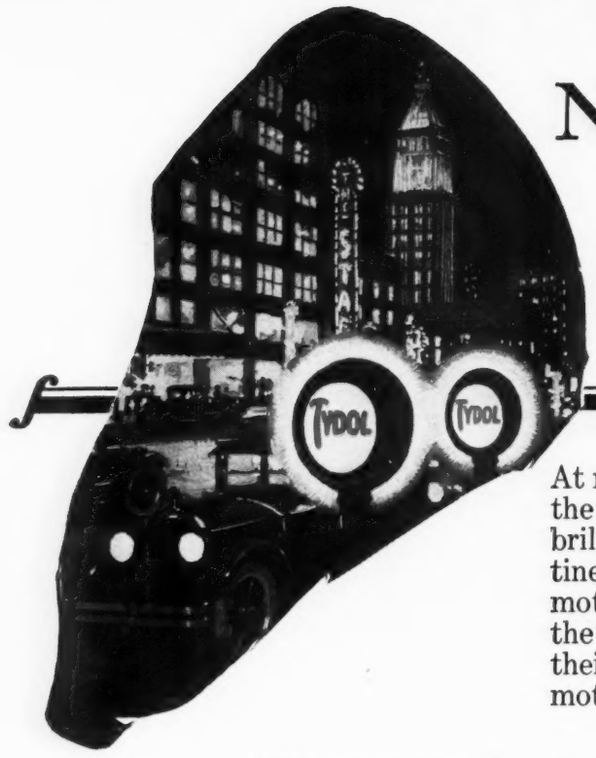
Our New Year Resolution:

To be of bigger, better, broader service to the automotive world than we have ever been before . . . not only on those special days when orders are signed, or shipped; but on EVERY DAY OF THE YEAR



NIGHT and DAY

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Effectively Advertise
Your Gas and Oils

At night Cincinnati Globes *effectively* blaze forth the trade name of your gas and oils. In the brilliant glare of daylight they *stand out* as sentinels to attract the passing motorist. Cincinnati Globes are the highest type and quality in their field—they help *sell* your motor fuels.

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We can faithfully reproduce your present design or our Art Department will develop (without charge) an exclusive design for your product.

Our increased facilities enable us to give prompt and satisfactory service.

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Write for information and catalog.

CINCINNATI GLOBES

Sell Oil and Gasoline

Would Change Engine Design To Make Oil Changing Easy

Staff Special

CLEVELAND, Dec. 20

THE suggestion has been made to automobile manufacturers that they increase the capacity of the crankcase sump on standard makes of cars and trucks as a protection against dilution of the motor oil by heavy ends of the gasoline seeping past the piston rings. The theory is that if say 10 or 12 quarts of oil were the sump capacity, instead of four or five quarts as with most makes of cars at present, the percentage of dilution would be much less were a quart of heavy gasoline to work into the crankcase, and the danger of dilution to the point the cylinder walls were scored would be pretty largely removed.

This suggestion came in the course of an address by T. A. Waerner, lubrication, engineer with the Tide Water Oil Sales Corp., delivered before the Joint Service Meeting of the Society of Automotive Engineers and the National Automobile Chamber of Commerce at Dayton November 20. The entire theme of this meeting was the discussion of methods of making autos of greater service to the public and making their care and upkeep less arduous on the owner.

He recognizes that some objection will come to this proposal to increase the sump capacity on the grounds that it is an effort of the oil companies to increase their sales of motor oil. While it is true that, with most makes of cars, this would call for an increased amount to replenish the crankcase after drainage, it is likely the car would not have to be drained as frequently and that the individual owner would quickly reconcile himself to the change through the better operation of his engine and less amount spent on repairs to damage from using too highly diluted oil.

Standardized Capacities

Along with his proposition to increase capacities of crankcase sumps, Mr. Waerner suggested that their capacities be standardized also, so that the garage man or service station operator would know definitely how much oil should be put in after the crankcase had been drained. As it is now he stated that, unless the man doing the job happens to be familiar enough with the particular make of car to know exactly how much oil is called for in the crankcase, he merely guesses at how much ought to be put in. In most cases the owner goes pretty much on guess work also.

Still another suggestion came from Mr. Waerner towards the end of simplifying the problem to the car owner of giving his car proper lubrication. This was the changing of engine design the small amount necessary to enable the crankcase to be drained without the necessity of crawling under the car and laboring with a screw bottom plug.

Through a coincidence this last practical suggestion came from Mr. Waerner independently nearly at the same time that **National Petroleum News** discussed this same subject in its editorial columns. This editorial carried in its Nov. 7th, issue has already drawn comment from some of the automobile engineers of the country. The subject has been brought to the attention of the American Petroleum Institute as one which can very profitably be taken up in its joint relationship with the Society of Automotive Engineers.

> Three suggestions made by T. A. Waerner, Tide Water Oil Sales Corp., engineer to automotive engineers to increase efficient engine lubrication.
>
> 1.—Do away with bottom drainage plug and instal device that will drain the car as easily as new oil is put in.
>
> 2.—Increase crankcase sump capacity from four or five quarts, as in most present makes of cars, to say ten or twelve to lessen percentage of dilution with heavy ends from the motor fuel.
>
> 3.—Standardize crankcase capacities so that garage man or station attendant will know definitely how much oil should be put in after draining.

Designers Approve It

The redesigning of the crankcase drainage plug is not new to the oil industry, Mr. Waerner pointed out in his remarks at Dayton. Back in 1921, he said the Tide Water company addressed to 5500 members of the Society of Automotive Engineers a circular letter asking their ideas on a device to drain the oil as easily as it was poured in the crankcase. Some 2400 replies were received, the majority agreeing that some such arrangement should be incorporated in engine design.

Mr. Waerner discussed the subject of redesigning the crankcase drainage plug before a meeting of the Engine Division of the Society of Automotive Engineers at Cleveland Sept. 20, 1921.

The substance of the following discussion by the automobile engineers was to the effect that the oil drain is a part which is so dependent on individual engine design and so relatively unimportant in connection with interchangeability or manufacture, that no definite type of oil drain should be standardized.

It was thought, however, that a recommendation could be made which would indicate that an oil-drain device should be provided, located at the lowest part of the oil pan or crankcase cover. It was also thought that possibly it could be recommended that such drains be operated through the crankcase from above a point opposite the centerline of the crankshaft.

No Action Results

Although this was two years ago but little has been done to date to carry the suggestion into effect, principally Mr. Waerner believes, because the engine designers do not have to take care of their own cars themselves in most cases, and do not appreciate the position of the individual owner of the low priced cars who has to do the work of keeping the car in condition mostly through his own efforts, or at least, if he hires the work done, wants it done as easily and cheaply as possible.

Among the 1923 new models only one make of car, so far as the writer's observations go, has featured a change in design to enable the car owner to drain his oil without the old performance of getting under the car. This is the Buick, which has, at certainly very small increased expense, put an extension on the petcock operating the drainage plug and carried it up alongside the crankcase to a point it can be easily operated by raising one side of the hood.

His idea in putting the proposition before the service heads of the automobile companies was because of his belief that these individuals have a keener interest in the public's needs and will work to bring them to the heads of the manufacturing companies. His own observations of present needed improvements to insure better engine lubrication have been gained through his experience as a car owner in taking care of his own car and through his contact with garages and other agencies selling motor oils.

His address at Dayton in the main is as follows:

(Continued on next right hand page)

Hackney

Barrels and Drums Drain Dry!

One of the unusual features about Hackney Steel Bilged Barrels and Drums is that they *drain dry.*

The design of the head and the location of the openings permits every last drop being drained without loss to the buyer.

Compared with the design of ordinary containers, having openings sunk below the level of the chime, the advantage is at once apparent—and it is a patented feature obtainable only on Hackney Steel Barrels and Drums.

PRESSED STEEL TANK COMPANY

Manufacturers of Seamless Bilged Barrels, Seamless Pressure Tanks, Hackney Drums

General Office and Works: Milwaukee, Wisconsin

General Sales Office: 210 S. LaSalle St., Chicago

Woolworth Building New York

443

CADDO CENTRAL

Oil & Refining Corporation

Refiners of

New Navy Gasoline
56-58 450 End Point Gasoline
64-66 400 Export Gasoline
Water White Kerosenes
Gas Oils
Fuel Oils

We own(not lease)800 Tank Cars

—operating two separate refineries, Both at

SHREVEPORT, LOUISIANA

What Can Engineer Do To Help Public?

By T. A. Waerner
Engineer, Tide Water Oil Co.

Service departments of prominent automobile factories have conducted extensive campaigns to educate their dealers to impress upon their customers the fact that, in order to obtain satisfactory operation of the engine, a clean undiluted oil must be employed. These service departments have devoted much space in instruction books and through service letters to recommend that the motor oil should be drained both in summer and winter at various intervals and whereas these campaigns have resulted in immeasurable benefits to the automobile owner, I doubt if the desired results have been achieved as satisfactorily as if the engines had been designed with a view to making it a bit easier, not only for the owner who looks after his own car, but for the service stations, who are called upon to perform this work.

I know of no other matter as regards proper lubrication, that is as necessary at this time as arranging engines, so that they can be properly drained.

How to Find Out

I was never more forcibly impressed with the shortcomings of the present day designs for conveniently draining crankcases than when, in the fall of 1920, I got the first car which I bought and paid for myself. About the first thing I did after purchasing this second-hand automobile was to get some of the best oil obtainable, and living in the country some distance away from a service station, I decided to do this little bit of work myself.

About 10 o'clock one Sunday morning, I tried to drain the crankcase, and in order to do so I had to get under the car, remove a pan, try to get a hold of a suitable wrench to remove a plug that was stuck and to make a long story short, after I was through with cleaning up after the job, it was time for dinner.

In thinking this matter over, I induced my employers to permit me to send a circular letter to all members of the Society of Automotive Engineers. This letter, dated Aug. 15, 1921, which perhaps many of you recall, was mailed to some 5500 members of the S. A. E. and reads as follows:

"It is generally conceded in the automotive industry that in order to properly care for internal combustion engines the lubricating oil must be drained at certain intervals and the crankcase filled with fresh oil.

"If the owner of an automobile undertakes to do this himself, it is necessary for him to get under the car to unscrew the plug placed in the bottom of the crankcase. The operation is inconvenient, dirty and laborious.

"Private owners, transportation managers and service men all look forward, we believe, to a conveniently located suitable oil drain incorporated in future engine designs—a device so arranged that all oil, including the oil left in the connecting rod troughs, may be drained as easily as it was poured.

"May we have your thoughts on the matter?"

We received some 2400 replies to this letter, all of whom agreed that such a campaign as we were conducting was well worth while, and almost without exception, all agreed that a suitable convenient oil drain operable from under the hood should be incorporated in all future engine designs.

May I read the abstracts from a few of the letters received from some of the most prominent automotive engineers of the country.

"We believe your suggestion regarding the location of an accessible oil drain in future engine designs is very much to the point, and it certainly meets with our approval. We do not locate an oil drain as per your recommendation at the present time, and we certainly will not fail to consider it in future designs."

Another prominent engineer's reply was as follows:

"We are at lack, in this respect, as the majority of other manufacturers. but I thoroughly agree with you that some method must be developed to make the draining of the oil a simple matter; otherwise the ordinary user will neglect it. We have this in mind and will correct it on our own cars just as soon as we possibly can."

Another manufacturer writes as follows:

"The easy draining of a crankcase is essential, but you must realize that it is difficult to put these ideas into effect on account of having dies made up and a large stock of oil pans on hand, which are made with the ordinary drain plug. At several of our plants, as soon as the supply is used up and committments taken care of, we will no doubt seriously consider making the change which you have recommended."

One Company Tried It

From the chief engineer of a prominent manufacturer of automobile motors: "We believe your idea to be a good one and it has been incorporated in some of our motors. There was just one criticism, and that is, it is too easily left open. However, I do not believe that amounts to very much and in all probability, we will incorporate a more accessible drain in our future motors.

All the replies to our circular letter were given to the standards department of the Society of Automotive Engineers and as a result, a meeting was called in Cleveland on Sept. 20, 1921, of the standards committee to consider the standardization of a suitable draining device, with suggestions for locations. As the result of this, the standards committee, during the summer meeting at White Sulphur Springs the following year, decided that no definite type of oil drain should be standardized, but the recommendation was made, that a suitable oil drain of ample dimensions operable from under the hood should be recommended.

I know of less than half a dozen automobile manufacturers, whose engines are designed so that they may be conveniently drained, and these manufacturers represent only a small part of automobile production.

To utilize these available heavier units with present carburetion methods, under all conditions of operation of the modern engine, is a problem and may best be understood when we consider what a rich mixture is necessary to start the engine; the amount of the intermediate fuels which is left in the explosion chamber unburned, finding its way into the crankcase, diluting the motor oil to such a degree, that under certain conditions this may, after a short operation, amount to anywhere from 10 to 20 per cent of the motor oil sump capacity.

Cutting Depreciation

Trusting that we all realize how unburned fuel reaches the motor oil sump and that we realize what a detrimental effect this has upon lubrication in general, does it not become a matter of the utmost importance to seriously consider a mechanical means, conveniently arranged in such a way as to invite the automobile owner to do certain things, which will be of ultra benefit, and prolong the life of the engine as a whole; reducing the general upkeep so far as service is concerned. It is only by a reduced cost of operating automobiles in general that we can hope to enlarge the quota of automobile users and reach a market which, today, is unable to own and operate automobiles chiefly due, not to initial cost, but to that dreaded thought of depreciation and general running expenses.

While oil consumption is due chiefly to three factors; leakage; evaporation, and cracking, sediment is formed and road dust is collected in the oil sump; heat is often attained high enough to make oils crack on the under side of the pistons, forming hard carbon particles which, where no protecting collecting screens are employed, fall to the bottom of the oil sump, clogging the oil pump screen.

On the majority of automobile engines, there is no convenient way of removing this screen for cleaning. About

There is no known method that will produce gasoline as cheaply as cracking fuel oil run *raw and once through* the Dubbs Process

If you doubt it we will prove it to your satisfaction and then you will wonder why you wandered so long in the dark

Universal Oil Products Company
Owners of the Dubbs Process
208 South La Salle Street Chicago

the only way to get at same and clean it thoroughly necessitates the removal of the entire oil pan, a procedure which it is usually necessary to have performed at a service station. Would it not be well to consider, as a universal practice on all designs, to so arrange the oil pump screen as to enable the removal of same, independent of the oil pan?

On some of the designs, there is a profusion of oil leads on the outside of the engine with numberless fittings to loosen, causing leakage, sometimes considerable oil loss and in certain cases, a complete drainage.

Withdraws From Hot Surface

In considering the damaging effect on automobile engines caused by highly fuel diluted motor oil, let us remember that a mineral lubricating oil does not have a high affinity for heat but has a tendency to withdraw from an overheated surface. For this reason a thinner protecting oil film is present where a thicker oil film is most needed, the lubricating oil drawing toward the cooler surface; in this way leaving the hotter surfaces open to complete withdrawal. Under such conditions dry spots occur with the resultant evil of scoring.

A lubricating oil diluted with motor fuel naturally will withdraw or evaporate readily, in fact, since the cylinder walls have an operating temperature beyond 400° F. the evaporation of the fuel diluted lubricating oil may be so rapid as to cause a metallic contact between pistons and cylinders over a large area with resultant complete seizure of the engine.

In considering this part as well as the moving surface of all other parts of the internal combustion engine, I believe that any expense engineers may go to by incorporating mechanical devices to reduce percentages of dilution and to incorporate devices to improve present systems of lubrication to be of the utmost importance.

Now about the third item, that of consideration of crankcase oil sump design to reduce percentages of dilution.

In the spring of 1922 I sold my car to one of my neighbors and to make a real bargain of it, I gave along a five gallon can of oil with the car.

With this he drove to a garage to have it drained. Sometime after, I saw him coming home and a cloud of smoke trailing him for blocks. I asked him what was the matter, if he had put the whole five gallons in. He admitted he had put plenty in but couldn't get the gauge to register full.

I knew that that old gauge didn't work, so under the car I went to drain part of it.

The garage man didn't know the right measure for correct pump capacity so we simply had to guess at it.

We then wrote to all manufacturers to get correct crankcase capacities as

K&W Superlastous

100@100° to 1250@100°

LUBRICATING OILS

Pale and Red Colors

HIGHLY FINISHED-STRAIGHT RUN

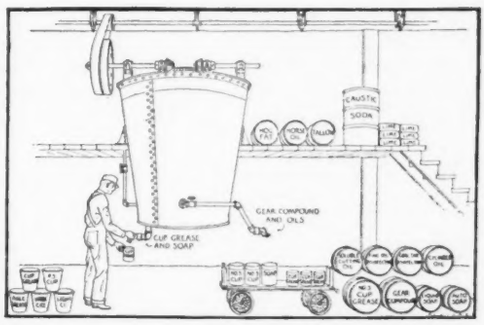
ZERO COLD TEST

INQUIRIES SOLICITED

KEEN & WOOLF OIL COMPANY

REFINERS

HOUSTON, TEXAS



Manufacturers Exclusively of Single Unit

Grease and Oil Compounding Equipment

The right size for the jobber with a small Boiler and Motor

F. E. MARTIN & CO., Lake Bluff, Ill.

MILWAUKEE

With every refinement.
Type 22, 50-gallon capacity
PORTABLE WHEEL TANK

is equipped like a gasoline pump of standard one-gallon design. Has ten ft. hose and nozzle, hose drain valve, adjustable measure stops, discharge register and meter if desired extra.

The heavy steel welded seamless tank, absolutely leakproof, has lockable fill cap and strainer, magnetic gauge.

The indestructible metal wheels, cushion rubber tired, makes this fine outfit easily portable inside or outside of building—anywhere for convenience.

Quality maintained throughout—the Milwaukee policy of making only the best.

Our bulletins give every detail—Write us today—Quantity production enables us to price Type 22 reasonably.

Prompt shipments, one or quantity lots.

TYPE 22 UNDER WRITERS' LABEL.

Complete Filling Station Outfits
Pumps—"Lub" Tanks—
Compressors
"Kant-Leak" Galvanized Tanks

MILWAUKEE TANK WORKS
Milwaukee, Wis.

Branches:

New York, Marbridge Building, Broadway a 34th Street.
Chicago, Fisher Bldg.
Minneapolis, Plymouth Bldg.
San Francisco, 401 Williams Bldg.
Cleveland, Plymouth Bldg.
Pittsburgh, Oliver Bldg.
Kansas City, 716 Lee Bldg.
Dallas—No. 1313 Kirby St.
Detroit—Cincinnati—Atlanta
Paris—44 Rue de Lisbonne
Rotterdam, 34 Leuvehaven
London, 7 Gt. Winchester Street E. C. 2

we thought it would be of value to the owner and to the garage man giving crankcase service to know what was correct oil measure in different engines. This we wanted to incorporate in the chart of oil recommendations. An analysis of this shows that crankcase capacities vary from four quarts on many types to 14 quarts on some others. As an example; two representative types of six cylinder engines of about the same piston displacement, give five quarts on one, compared to 14 quarts on the other. Would it not be convenient for all concerned to standardize on two capacities, one measure for 4 cyl. engines, and the other for 6 and 8 cyl. engines? Perhaps the standards department of the S. A. E. which has done such wonderful work in the past, could in time get manufacturers together to agree on certain measure in future design.

Now regards dilution in these engines of different sump capacities. One and a half quarts of kerosene poured into the engine with a fourteen quart sump capacity represents a 10 per cent dilution, the same amount added to the engine with a five quart capacity represents nearly a 30 per cent dilution. Considering that the average oil in the sump in operation is about half full, these comparative percentages get all the more apparent.

At S. A. E. annual and semi-annual meetings we have daily bulletins telling members what they are doing, how they are behaving and so on. As a note about the standardization of convenient oil draining device, it mentioned that this matter was originally investigated by oil interests trying to reach a new way of getting rid of more of their products. I don't dare think of what they would say were we now to suggest that one way of reducing percentage of dilution in the future would be to make the oil sump capacity large enough to hold a barrel or so.

Ads Feature Service By Recounting Operators' Experiences

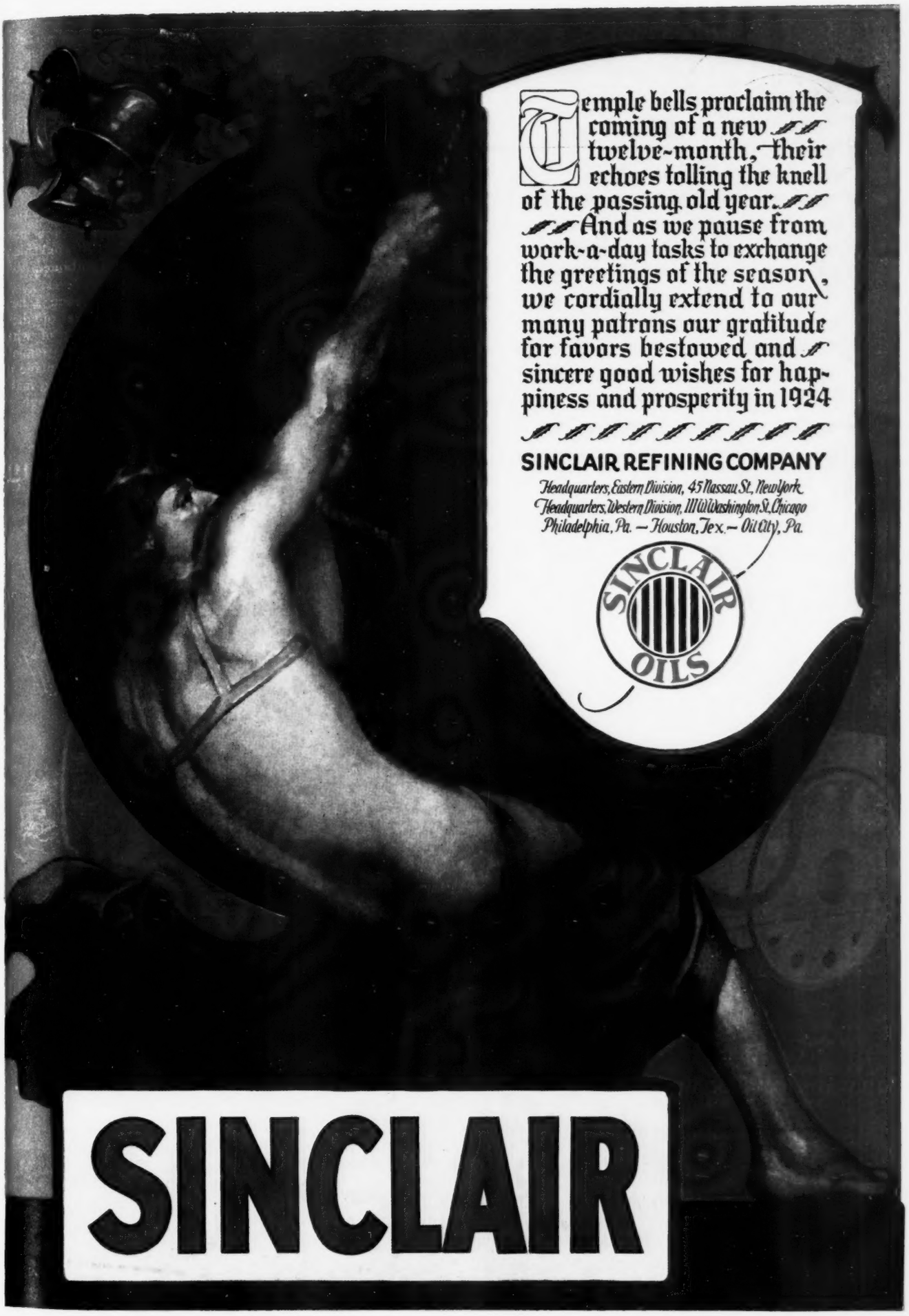
CLEVELAND, Dec. 20.—An interesting and unique manner in which the news columns of the daily paper and a paid company advertisement are tied close together has been worked out by Wesley I. Nunn, advertising manager for the Marland Refining Co., Ponca City, Okla., in an ad called "Old Trails and New."

The Woodward Democrat, published at Woodward, Okla., some time ago ran in its new columns an article describing a new Marland service station opened in that town. The editor of that paper, D. P. Barnum, out of his personal knowledge of the development of transportation in this part of the southwest from the days of the Indian trails, through the early days of the railroads, to the present automobile highways, wrote a news article of 150 to 200 words in which he painted a word picture for his readers of the development of modern service stations as the latest development in this chain of transportation improvements.

Mr. Nunn, with the permission of this editor, worked this article complete into one of the Marland's advertisements, showing the station and also an illustration of the editor at his desk. The background for the entire ad is a subdued impressionistic picture of these various means of transportation.

This particular ad, which of course is only one in the newspaper series run by the Marland company in the towns in which it operates service stations, has appealed to the editors of many of these papers, and they have carried in their own news columns the story as originally carried in the Woodward Democrat, or the letter from Mr. Nunn to Mr. Barnum in which he described his idea for making this story into one of the company's ads, or getting one of the pioneer business men of their town to describe in his own way the opening of

"He drove back to admit he was wrong!"
"Ninety and ten is a dollar and one is two.
"But I gave you a five dollar bill---this is only change for two dollars."
That's what started the argument (by the customer, honestly thinking he was right.) The Marland Man remembered rule number seven of the Marland Service Code which says:
"Misunderstandings with some patrons will arise. Always take the blame by mistaken attitude, with a smile---never under any circumstances argue with a customer. Keep smiling---regardless."
In speaking of the incident the customer said:
"You bet I drove back. I hadn't gotten a mile from town when I reached in my pocket for a match and there was that five dollar bill I thought I had given the Marland Man."
"I said then and there that a company that had men who went so far to satisfy a customer must surely go to a lot of trouble to produce high quality products. Marland products for me from now on."
MARLAND OILS
always the same-always good


Temple bells proclaim the coming of a new twelve-month, their echoes tolling the knell of the passing old year.
And as we pause from work-a-day tasks to exchange the greetings of the season, we cordially extend to our many patrons our gratitude for favors bestowed and sincere good wishes for happiness and prosperity in 1924
SINCLAIR REFINING COMPANY
Headquarters, Eastern Division, 45 Nassau St., New York
Headquarters, Western Division, 111 W. Washington St., Chicago
Philadelphia, Pa. — Houston, Tex. — Oil City, Pa.
SINCLAIR OILS
SINCLAIR

Copyright, 1923—Sinclair Refining Co.

Make sure you are receiving regularly the *price list - It's yours for the asking*

See our current quotations on

Zero Motor Oils

and consult us regarding your present and future requirements on all Petroleum Products

- from a can to a cargo

SINCLAIR REFINING COMPANY

Headquarters, Eastern Division, 45 Nassau Street, New York
Headquarters, Western Division, 111 W. Washington Street, Chicago
Philadelphia, Pa. Houston, Texas Oil City, Pa.

new trails as transportation methods developed.

Other ads in this same newspaper series are developed around service ideas that the Marland company carries out at its service stations. They are presented in a new way, with human interest copy and illustrated, and are many of them built around actual instances happening at their service stations. While the series has been developed to carry the story of Marland service to the public, they will undoubtedly have an effect also on their own service station operators, in emphasizing on their minds the importance the company places upon service furnished the motoring public at its service stations. Some of these ads are as interesting reading as could be found in the paper's news columns in its feature stories.

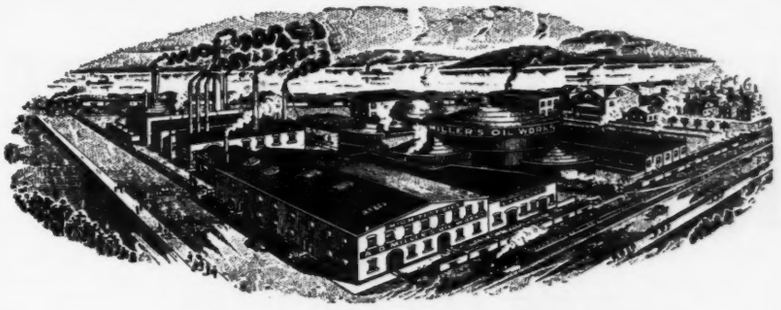
For example one such ad tells the story of the executive of the company who pretended to be deaf and dumb when he drove into Marland stations in a dozen towns. In every case but one, this executive found, the ad copy says, that, when his wants were attended to, the price was shown him on a sheet of paper with the words "thank you" written beneath.

Another, entitled "How a Service Man's Smile Dispelled a Family Squall," gives an experience of one operator in handling a family touring party that came in after a long hard day's drive with the lights in the car refusing to work. He fixed the lights, showed the lady to the rest room where she could clean up and told them where they could find a clean quiet hotel and also a restaurant off the beaten path where they could get a good supper. The next morning the couple came back to comment on the friendliness that had been added in this case to the more than usual service.

Still another tells of the gratitude expressed by a salesman who was in a hurry to reach his prospect and was told by the Marland operator how to get there in time regardless of the fact a bridge was out on the main road. "The credit for this order really belongs to the Marland Service Station Man", this salesman told his customer after the order was signed.

Another recounts in good interesting copy the experience of one patron who insisted the station operator had given him only change for a $2 bill, when he had been tendered a $5 bill. The operator, rather than argue the matter unduly, gave the customer the change for a five. The customer found the $5 bill when he was little ways from town and drove back to the station to acknowledge his mistake.

FORT WORTH, Dec. 20.—The new half million dollar plant of the Arab Gasoline Co., near Eastland, began production of natural gasoline this week, construction having reached such a stage that partial operation is possible. When completed the plant will have an output of 20,000 gallons of gasoline daily. The Lone Star Gas Co. will take three residue gas from the plant.



A. D. MILLER SONS CO.

Producers and Refiners

PENNSYLVANIA STEAM REFINED CYLINDER STOCKS
Fire tests 600°, 635°, 650° High Viscosity.

VISCOUS PALE NEUTRAL OILS
Color No. 3 a Specialty. 180, 200, 220 viscosity

KEYSTONE PAINTERS' SPIRITS
52-54 Gravity. Free from oil.

ALL GRADES WATER WHITE OILS, GASOLINES

PITTSBURGH, PA.

Cable Codes: Western Union (Universal)
A B C (5th Edition)

Established 1862

COSDEN & COMPANY

Tulsa, Oklahoma

Manufacturers and Distillers of

High Grade Gasoline-Napthas

Lubricating and Illuminating Oils

Unexcelled
Producers-Refining-Transporting
Facilities

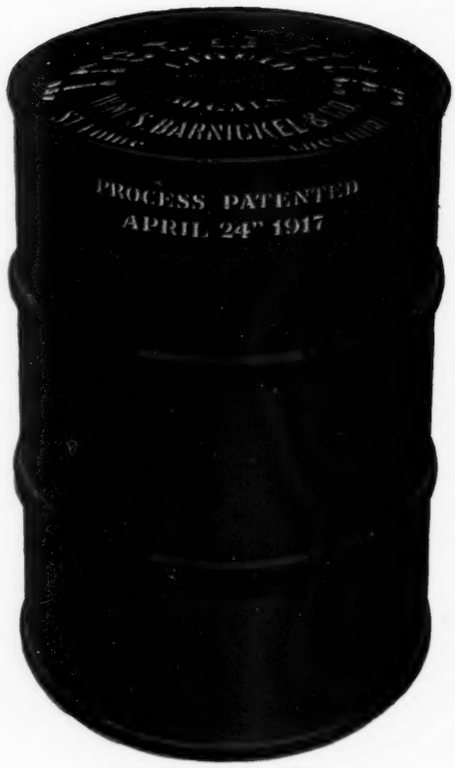
WE MAINTAIN EXPERTS IN THE PRINCIPAL FIELDS

To Help You With Your Cut Oil Problems

When your well begins to cut, or treating of tank bottoms becomes a problem, call in the nearest TRET-O-LITE expert. A wire to us will bring you his address.

Our field men will run tests to show you exactly what TRET-O-LITE will do, will recommend the best type of plant for your particular need, will superintend its construction (mainly from pipe and tanks such as you already have available), and will instruct your men in its operation.

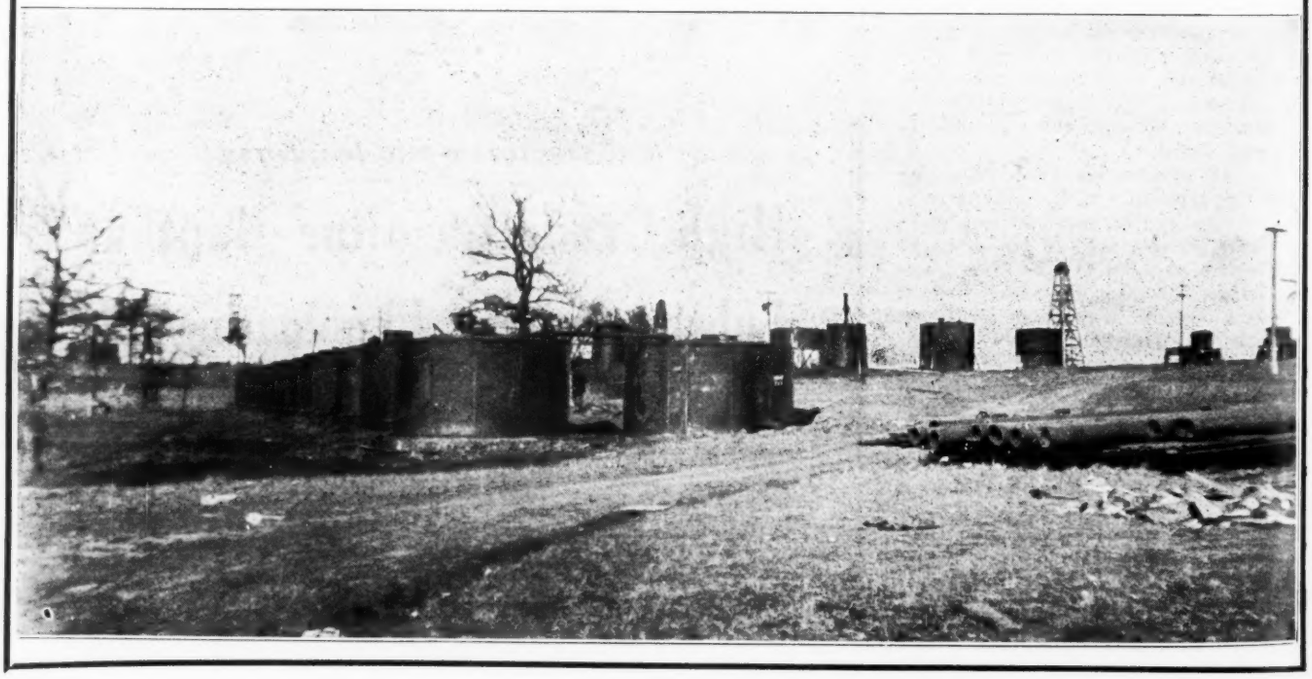
TRET-O-LITE treats fresh cut oil at an average of 1½ cents per barrel of recovered oil. Tank bottoms average 6 cents. It secures a clean "break", and recovers ALL the oil. Write for our book, "TRET-O-LITE".



WM. S. BARNICKEL & CO.
St. Louis, Mo.
Offices and Plant: Webster Groves, St. Louis Co., Mo.

Tret-O-lite
Reg. U. S. Pat. Off.

A Midcontinent TRET-O-LITE Plant Which Recovers 5,000 Barrels of Pipe Line Oil Daily



What Oil Burner And Oil Industries Can Do For Each Other And The Public

By J. Parker B. Fiske,
President, New England Oil Heating Ass'n.

Delivered At American Petroleum Institute

THE oil heating industry, recently born, is yet an infant, which requires proper care, nurture and training to bring it to the state of sound, vigorous and dependable manhood. The oil heating industry has yet to establish for itself a place among the permanent institutions of modern life.

There are always infant diseases in every infant industry, and the oil heating business is no exception to this rule. Of these diseases, irresponsible exploitation of worthless apparatus is the most deadly. The public is just emerging from the clouds of suspicion, doubt and fear and is beginning to put more real confidence in the oil burner as a utility for the home. It is apparently convinced by the long, painstaking and conscientious work of a few of the earlier manufacturers that the oil burner is a safe, dependable and efficient heating agency. The story of good service is spreading from neighbor to neighbor, and if not interrupted will, within a reasonable time. have the public convinced beyond a doubt.

It is inevitable that this situation should be rich in lure to the would-be "get-rich-quick." It is here that the danger lies, for it is so easy to make and sell an oil burner, particularly if the price is low. Almost any blacksmith, with a few pieces of pipe, some cheap castings and possibly an electric motor, can make a device that will "burn oil," and almost any irresponsible "fly-by-night" concern, by making sufficient guarantees and promises, can sell such a device, because the price is low. The so-called "inventors" of these "marvels of modern science" usually have little or no knowledge of even the rudimentary principles of combustion; no experience in the handling of oil; no knowledge of hot water or steam heating systems; little or no mechanical ability; very little, if any working capital, and worse than all, they have no overpowering desire to serve the public. They rise like toadstools in the night, flourish for a few hours, poison a large number of people and then disappear.

The Disappearing Promoter

In Boston alone five different makes of oil burners which were being extensively marketed six months ago, heavily advertised with extravagant claims and sold to a large number of unsuspecting purchasers, have proved such total failures that they have been withdrawn from the market altogether, the purchasers left to shift for themselves, and in at least one case the selling company, which collected money in advance has disappeared without even attempting to install any apparatus. Other makes of apparatus are right now being offered to the public, equally bad in character and certain to go the way of their predecessors.

Morally speaking, no industry has any license to exist and none can permanently prosper unless founded on real service to the public, and those in the oil heating business who value permanent success above mere temporary profits may well consult together to see what can be done to place the industry on a high plane of public service.

Mr. Fiske, in this paper, sounds a call to arms. The oil and burner men, he shows, have quite a deal to do before fuel oil heating reaches perfection. This paper was read on Dec. 12, in St. Louis, before the group session on utilization of petroleum products. —Editor.

This is hard enough to accomplish in any industry however well established and well organized; in a new business like ours, where as yet we are all strangers to each other and where there are no established standards of any kind, it seems at first sight to be quite impossible. Yet, I feel that something can be done through organization and I am here to outline a plan, the general adoption of which, I believe, will at least make a substantial start on the road to the desired goal. I refer to the organization of local associations by those actively connected with the oil heating business by city or state, for the following purposes:

1. To educate the public as to the merits of a good, reliable oil burner.

2. To secure by proper means, uniform state regulations for the protection of the public and of the reputable oil heating interests.

3. To support in every possible way all public authorities in the execution of law and regulation.

4. To set up such standards of performance as public interest and the real interests of the industry require, and to refuse to associate with those who cannot or will not conduct their businesses according to such standards.

5. To eliminate bad practices in the industry so far as possible, in order that confidence of a "square deal" may be inspired in the public mind.

Who Should Belong

Such an association should be composed of the leading oil companies, leading oil burner manufacturers and distributors and such other concerns as are directly interested in oil heating, like the mechanical and electrical supply houses, electric power companies, etc., etc.

An association of this character, composed of reputable business men, jealous of the character of its membership, standing for good, clean, reliable and efficient service to the public, will command instant attention from public authorities, the press and the public in general, and with proper management will soon inspire a degree of confidence conspicuous for its absence in that great competing industry, which in the words of Governor Pinchot, of Pennsylvania "refuses to clean its own house."

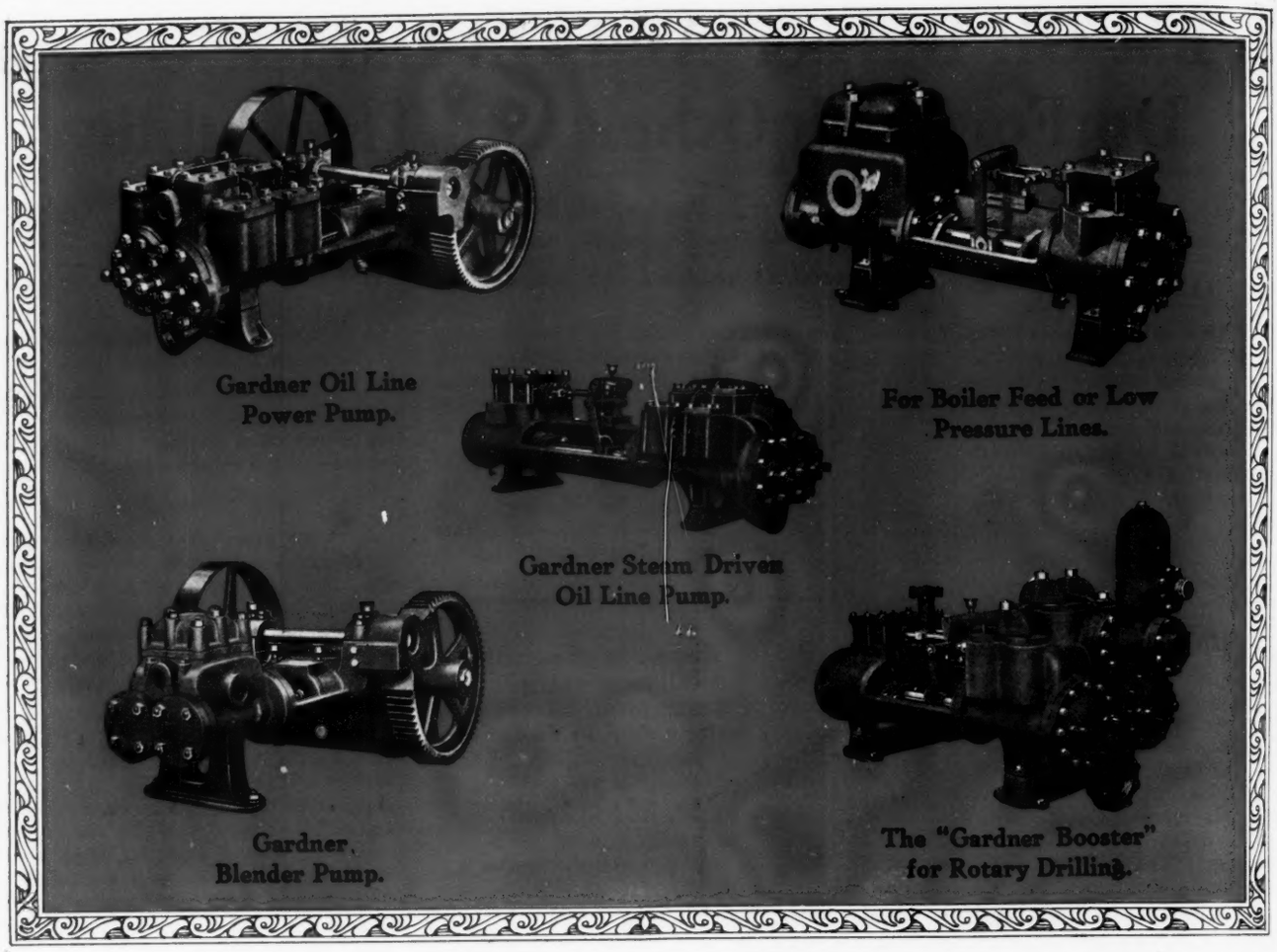
In Boston we have started an association with these objects in view, and while it is still young and small, much valuable work has been accomplished. If we can secure many others, whose membership we are now seeking, it should prove a real power in the heating field.

Allow me to elaborate a little further on the possibilities of such an association.

Education

It can hold public or semi-public meetings with prominent speakers to discuss authoritatively such questions as the available oil supply, economy of operation, safety from fire and the general advantages of oil as a fuel.

Where news value is present, the press will gladly broadcast the story to hundreds of thousands of its readers. We have already held two semi-public meetings, attended by oil men, burner men, public officials and the invited public, and have secured several pages in the aggregate of live news articles on oil burning in all leading papers of New England. This was followed by a public hearing on the merits of oil as a substitute for anthracite coal before the Massachusetts state legislative committee on fuels, and by a discussion for a whole evening by the Massachusetts Fire Chiefs' Association. These


Gardner Oil Line Power Pump.
For Boiler Feed or Low Pressure Lines.
Gardner Steam Driven Oil Line Pump.
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The "Gardner Booster" for Rotary Drilling.

Now Exclusive Distributors for—

GARDNER OIL INDUSTRY PUMPS

We are pleased to announce that the Gardner line of Oil Industry Pumps will henceforth be distributed to the Industry exclusively by the Continental Supply Company.

We have thoroughly investigated the Gardner line of pumps, both as regards methods of manufacture and performance in actual use, and can endorse these pumps as unsurpassed for the purposes for which they are recommended.

A full line is offered including Slush Pumps, Pipe Line Pumps, Boiler Feed Pumps, and Blender Pumps. See our nearest store for full particulars.

"If CONTINENTAL Sells It There Is No Better"

THE CONTINENTAL SUPPLY COMPANY

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BRANCHES AT ALL OIL COUNTRY POINTS
We are pleased to announce our new store at Wewoka, Okla.

CONTINENTAL

meetings were also liberally reported in New England papers and the resulting publicity has aroused an intense interest among all classes of New England people.

It can educate the public through association advertising, at a fraction of the cost of individual advertising, as has been done by the California Fruit Growers' Association, the Lumber interests, the Portland cement manufacturers and hundreds of other successful industries, with phenomenal success.

It can discreetly, with honesty and with fairness to all, give warning to the public of the folly of entrusting itself to irresponsible manufacturers of worthless apparatus, and to some extent, at least, forestall the grief which will otherwise come from the unrestrained exploitation of such apparatus.

It can employ the moving picture art to disseminate knowledge to millions of people and possibly in time it can hold exhibitions of worthy oil burning apparatus with lectures and other educational features. All of this can be done with a speed, effectiveness and economy quite impossible through individual effort.

State Regulation

The present status of public regulation of oil burning installations is deplorable from the standpoint of both the public and the industry. Some states have no regulations at all, leaving the matter in the hands of city or town. New York state is an example of this kind. Some of its towns have no regulations and any kind of a burner with any kind and size of oil tank can be installed in the basement of any home without restriction, while the neighboring towns have surrounded the whole matter with such an absurdity of rules and red tape that it is impossible to install any kind of a burner on a commercial basis. The same impossible condition exists among some states which have adopted regulations; few having worked out a code which is strict enough to protect the public without being burdensome in the matter of costly and unnecessary requirements.

In Massachusetts the whole matter has been placed in the hands of the state fire marshal, an officer in the Deparment of Public Safety, and an admirable code of rules has been adopted, with amendments from time to time, until today, the interests of both the public and the manufacturers are safeguarded, in a sane and satisfactory manner.

Rules Are Protective

A few comments on these rules may be of interest as follows:

a. A permit must be obtained from the State Fire Marshal, or his representative for each installation, thus giving the marshal a chance to inspect the installation to determine if it has been properly made.

b. All installations must be made in accordance with the state regulations.

c. All oil must have flash point of 115 degrees F. or over, closed cup tester.

d. No burner can be installed until the make and type has been approved by the State Fire Marshal, who may require the setting up of a model plant before issuing a certificate of approval.

The marshal will shortly assign a model number, etc., to each manufacturer who will be required to attach a brass tag, properly stamped, upon every burner installed, in order that the state officers may recognize such burners as have been approved.

e. Tanks must be of approved steel construction, capacity for inside tanks being limited to 275 gallons unless fireproof or buried underground.

f. Gravity feed burners must be equipped with automatic safety devices to provent flooding of the burners.

g. Chimneys must have sufficient draft to insure safe operation.

h. Glass gauges are prohibited on oil tanks.

i. All steam heating boilers must be equipped with automatic devices to reduce or extinguish fire upon undue pressure on the boiler.

j. All piping must be protected against injury.

The association has been closely in touch with the Fire Marshal and has assisted in the making of these rules, objecting to some proposed requirements which were deemed unnecessarily burdensome and suggesting some essential requirements, out of its practical experience in the business, which would otherwise have been omitted.

It is believed that similar associations in other parts of the country might have a powerful influence in straightening out the present unfortunate confusion attending this matter, much to the benefit of the public and to the manufacturer who could then standardize his apparatus with efficiency and economy.

Enforcement of the Law

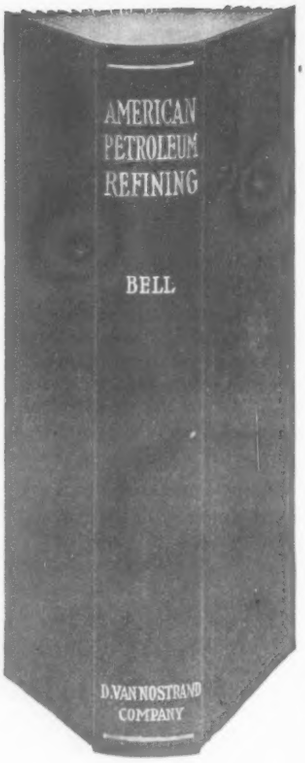
It is extremely difficult for any public authority to enforce rules and regulations regarding oil heating apparatus, at least without some co-operation from those in the industry. It is very easy

Install Visibles After Overcoming Prejudice Of Argentinians

FORT WAYNE, IND., Dec. 20.—The hardships of being a pioneer in any field of endeavor are evident to the Wayne Tank & Pump Co. which claims the honor of being the first company to install visible type gasoline pumps at Buenos Aires, Argentina.

Due to the widespread opinion that in visible type pumps there is increased fire hazard and liability of explosion, the Buenos Aires officials at first refused an installation permit to the company. However, J. H. Williams, export manager of the company, satisfied as to the safety of his product, gave a test demonstration of the pumps by building a fire around them after they had been connected to gasoline tanks. The fire burned for one and one half hours and the test was witnessed by the city authorities in charge of issuing installation permits Further evidence of the safety of the pumps is demonstrated by the attendant in the picture, who is fearlessly smoking a cigaret while delivering gasoline to a customer.

A fearless attendant puffing his cigaret as he makes a gasoline fill from the first visible dispenser installed at Buenos Aires.



That Valuable Book on Refining

Every refiner should have a copy of AMERICAN PETROLEUM REFINING by H. S. Bell.

It pertains to the design and operation of refineries, the construction of pipe lines, and the facilities for the storage and transportation of oil. And all this information was gained by actual experience.

It is a good book for the plant superintendent who appreciates the importance and necessity of efficiency in plant operation.

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NATIONAL PETROLEUM NEWS

826 Caxton Building
Cleveland, Ohio

for an unscrupulous dealer and householder to slip improper apparatus into place and put it into use without the knowledge of public authorities. Such practice, if allowed to become general, would unquestionably react upon the industry through failures and fires caused by faulty apparatus and installation. The oil heating man will, therefore, find it profitable in the long run not only to obey the law himself, but to assist the public authorities in compelling others to do so. The burner man and the oil man are out in the field and in position to know where installations are being made contrary to the law, and by informing the local authorities they are in a position to largely stamp out bad practices of this character.

Oil Company Aids

One of the large oil companies is right now refusing to deliver oil to a certain Boston installation which has been made contrary to law and in a dangerous manner, and threatens to report the installation to the state fire marshal unless the defects are remedied. Similar action by all oil companies would soon correct this evil.

The New England Oil Heating Association makes certain requirements of its members and applicants regarding observance of the law. Allow me to quote from its code:

"No applicant shall be admitted to membership of this association until it has demonstrated to the satisfaction of the membership committee that it has complied with all state and municipal regulations, including the securing of written permits from the proper authorities, where such permits are required.

"No applicant shall be admitted until the apparatus sold by it has received the written approval of the State Fire Marshal (where such official exists) and has passed the insurance authorities.

"Members of the association shall from time to time be required to submit evidence upon request of the board, that they are complying with all state and municipal regulations in continuous and consistent manner as a part of their regular business routine."

The above extracts are somewhat condensed for the sake of brevity, but cover the essence of the matter.

Standards of Performance

The oil heating industry must give proper service to the public in order to attain complete and final success. The purchaser of an oil burner must get ultimate heating satisfaction in his home. This is a large and difficult contract. Let us not deceive ourselves on this point. It is probably as difficult a contract as any business man is called upon to deliver. I venture the statement that only those who have been engaged in the actual installation of an oil heating apparatus for a considerable length of time, can fully realize what difficulties must be overcome to reach this final goal—ultimate heating satisfaction in the home.

The most perfect oil burner devised will not deliver ultimate heating satisfaction, unless the whole installation, including the customer's existing heating plant is handled with some real engineering brains. The trouble is that we are called upon to give performance not on our oil burners alone, as tested in the laboratory or in an ideal heating plant, but in the heating plant of Brown, Robinson and Smith as they exist. In other words, we must somehow find a way to make our oil burners satisfactory in connection with the customer's heating plant. This is where the difficulty arises for the experienced oil burner man knows to his sorrow that the average heating plant even in the modern house, is of faulty character.

I venture the statement, based upon several years experience, that at least three out of four heating plants have some distinct fault which, unless remedied, will prevent the oil burner from giving full and ultimate satisfaction, in the living quarters of the family. To illustrate, hot air furnaces are usually old and often leaky; the distributing pipes are too small, the registers are badly located, and not one in ten has a full, 100 per cent circulating system. Hot water boilers are too large or too small for the distributing system; piping is too small, radiators are not sufficient, the piping system has pockets which prevent proper circulation, etc., etc. Steam boilers are too large or too small; rooms are not sufficiently radiated; radiators are badly located; pipe systems are defective, and most common of all, radiators are badly vented.

The new and inexperienced oil burner man, with his "perfect burner" will say, "This is no affair of mine! I put my burner in the boiler, produce sufficient heat, and if my customer's heating plant is faulty, that is up to him." From a strictly legal standpoint, this position is entirely correct. For the oil heating industry today, seeking public favor through performance, it is all wrong.

Let us examine this situation more carefully. Who is the most likely prospect for an oil burner tomorrow? The man who is not getting ultimate satisfaction from coal. Why is he interested in oil, Because he believes that with an oil burner all his troubles will disappear. If he is to expend a large sum of money to merely replace coal with oil without any further satisfactory heating results in his home, he will turn out to be a poor booster for oil.

More Than Mere Sale

We must, for the protection of our own future, interest ourselves in making the purchaser and his family more comfortable. We cannot build a large industry on the element of saving money alone. If we conduct our business skillfully, we will save him considerably on his fuel, we will rid him of dirt, ashes and labor, but if we do not keep him warm, our efforts will be a failure. We must take his heating plant into consideration, and if it is wrong, we must

The Story of a Letter That Came Back to Us

What We Wrote to an Oil Company—

"Your subscription to National Petroleum News expires the first of the month. Etc."

What the Bookkeeper Noted on the Letter

"Let's cut it out."

What the President of the Oil Company Wrote—

"You may discontinue all the other oil magazines, but I want to continue with National Petroleum News."

And this is What Happened—

Our original letter came back to us, with a check for $2.50 renewing the company's subscription to National Petroleum News.

IT'S the executives, the newcomers, the ambitious men that look to National Petroleum News every week for all the important happenings in the Oil Industry.

Our wire service and national newsgathering facilities are relied upon by more than 10,000 oil men for a thorough knowledge of spot conditions, as well as a thorough understanding of new developments, new processes and new producing, refining and marketing methods.

Read National Petroleum News every week. Know spot conditions. Keep abreast of the newest developments.

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893 Caxton Bldg., Cleveland, Ohio.

Send the next 52 issues of National Petroleum News to me at the address given below. Enclosed is check for $2.50 (Canada $3.50; Foreign $5.00).

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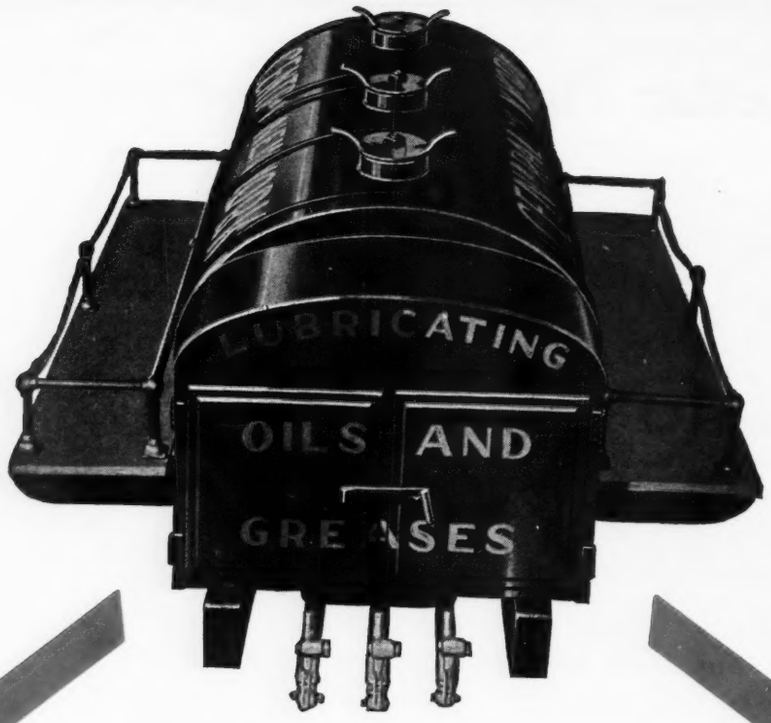

The 6 Inch Filler Openings—

on Brown Certified Ford Truck Tanks expedite filling and afford easy interior inspection. The plugs are equipped with automatic vents.

Large roomy can racks equipped with either adjustable chain or pipe guards and big can compartment enables one to carry large stock of lubricants and other petroleum products.

Incorporated in Brown Certified Ford Truck Tanks are years of experience in designing and building truck tanks that last.

Order One today for trial. Shipment from Stock. Larger sizes to your specification.

Brown Certified Steel Products include I. C. C. Barrels and Drums and all classes of storage tanks up to 30,000 gallons Capacity

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978 BERRY AVENUE ST. PAUL, MINN.

CRYSTAL OIL WORKS
OIL CITY, PA.

FOR over thirty years we have been supplying our trade with all products of petroleum, including the unexcelled lubricating oils for which Pennsylvania Crude is noted.

Yet throughout all our years of service we have kept pace with progress, not only as regards refining processes but in our methods of doing business.

We will welcome the opportunity of adding your name to our list of regular customers.

determine wherein and why and suggest the necessary changes to be made by him before we can guarantee ultimate satisfaction. My own company, therefore, employs an engineer of long experience in the actual installation of steam and hot water plants, who makes a careful survey of the entire heating system and a written report with our recommendations is forwarded to every purchaser with our acceptance of his contract. Our experience is that these reports are received gratefully and that in most cases the owner is only too glad for his own benefit to make the necessary changes where such are possible at reasonable cost. Where such changes are made, we can be certain of ultimate heating satisfaction.

An association organized with the right spirit can at least help in this desirable work by conferences of its members; by comparing notes, by interchanging information as to methods and costs, and the best element in the industry can gradually work out a code of practice which will result in such standards of performance that the "fly-by-night" can no longer exist.

Some people will say that this is too altruistic to be practical. I say that it is altruistic but thoroughly practical, and will prove extremely profitable to the industry in the long run. Modern industries which have been successful, have practiced exactly this procedure, as an example of which may be mentioned the automotive industry, the ceramic industry, the chemical industry, etc.

The fourth and great task which the oil industry should undertake is to advertise in a large and continous manner the virtues and advantages of oil as a fuel. The Standard Oil Co. of New Jersey has already undertaken this and is now entering upon its fourth campaign, using leading newspapers throughout New England for a period of four weeks, in large and well-executed advertisements. The oil burner man makes the sale of his apparatus, collects his money and then he is done as far as that particular purchase is concerned, but the oil company, like the brook, "runs on forever"; therefore, the oil man can afford to spend more liberally for his advertising than can the burner man, and it is believed that the experience of those oil companies who have adopted this plan has shown that "It pays to advertise."

In conclusion it may be stated that I have outlined a large program. This is true, but the possibilities are large, and with proper management, the returns will be large and permanent, provided the problem is attacked in a large way, with one aim in view—to serve the public at a fair price.

TULSA, Dec. 20.—S. R. Scivally, Mid-Continent representative of the Sinclair Refining Co., is back at his office in the Cosden building after a month at Hot Springs, Ark.

RIVETED and CAULKED TANKS for Prompt Shipment

GRAVER Corporation builds riveted and caulked bulk storage tanks because results in use and the tests which have been made prove that this type of construction makes the best tank for this purpose.

There is no paper or other filling material between the joints of a GRAVER riveted and caulked tank. The metal to metal, boiler construction joints, are made and held tight by riveting on close centers and forcing the metal together under the caulking hammer.

Every tank is tested under hydrostatic pressure and is free from leaks before leaving the shops. They are guaranteed against defective material and workmanship. Of the many thousand of GRAVER built tanks but few have developed leaks after being shipped.

Bulk station owners are proud of the appearance of their stations. What can give a better impression of a station than a GRAVER tank with its straight sides and ends and its solid joints showing no leaking?

Standardization of sizes enables GRAVER to sell riveted and caulked tanks and small welded underground tanks at a quantity price for single units. Right now, GRAVER is making exceptionally prompt shipments of either car loads or single tanks. Some of the more popular sizes are in stock completely fabricated, ready for immediate shipment.

GRAVER Corporation

(WM. GRAVER TANK WORKS FOUNDED 1851)

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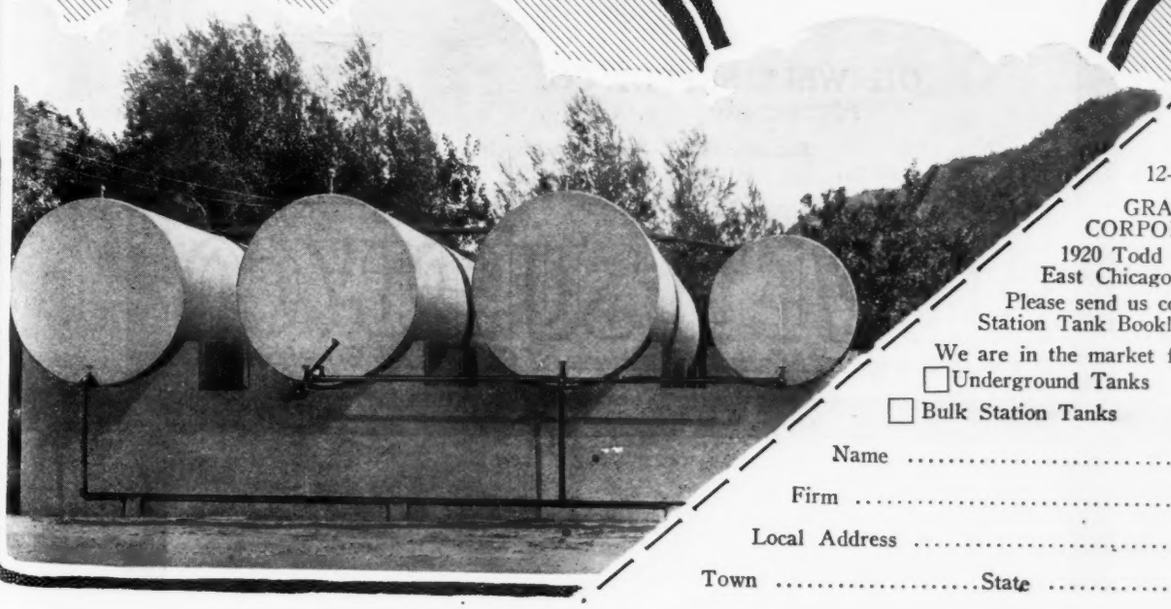
TULSA, OKLA.
202 Haver Bldg.

HOUSTON, TEXAS
423 West Bldg.



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12-26-23

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1920 Todd Avenue
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Please send us copy of Station Tank Booklet ST3.

We are in the market for
☐ Underground Tanks
☐ Bulk Station Tanks

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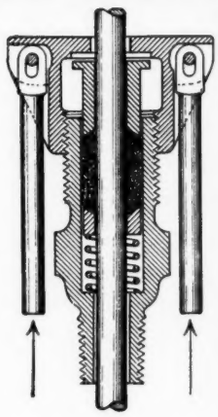
Stop Your Production Leaks with an

IMPERIAL STUFFING BOX

The Imperial Stuffing Box is the ideal Stuffing Box for Oil Field use. It costs less to maintain and provides for equal tightening of the gland by the use of two handles. No wrench is necessary.

The Imperial cannot be tightened down more on one side than on the other.

Inquire at any of our 100 Branches.



CROSS-SECTION

Note the spring under the packing that holds the loose packing close to the rod and supplements the packing action of the lead glands.

OIL WELL SUPPLY CO.
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"OILWELL" ESTD 1862 TRADE MARK REGISTERED

OILWELL SUPPLY CO

World's Largest Manufacturers of Oil Field Equipment

PRODUCTION SECTION

Gulf Revises Schedule Of Crude Prices

TULSA, Dec. 20.—The Gulf Pipe Line Co., purchasing and transportation subsidiary of the Gulf interests in Texas, announced today that it had revised its schedule of crude prices so as to conform with prices recently adopted by the Texas Co. and Magnolia Petroleum Co. Prior to this, the Gulf's North Texas prices had been identical with those used in Oklahoma. The new prices are:

Below 33 gravity	$0.75
33-35.9 gravity	1.00
36-38.9 gravity	1.15
39 and over	1.30

Powell Production Off To 85,000 Barrels

Staff Special

HOUSTON, Dec. 22.—Powell production had declined to roundly 85,000 barrels at the end of the week, this daily average reflecting two conditions that brought the crude oil recovery to a level lower than the actual capabilities of the field.

Probably as high as 150 wells are in the transition stage from flowing to pumping, these constituting at least 15,000 barrels daily potential production not included in the actual recovery figures.

Rainy weather conditions also had their effect upon operations, especially since they had been sustained over nearly all of the week. As an example of the weather's effect upon production, one company had an average of 35 producing wells down every day out of a total pumping of 140. It had 50 others that had ceased flowing that had not been equipped for pumping.

Penn-Mex Completes New Well In Alamo

Staff Special

HOUSTON, Dec. 22.—The censorship of communications from Mexico, incidental to revolutionary activities, held back detailed information over the week of the completion of the Penn-Mex Fuel Co.'s No. 22 Alamo well, across the Tuxpam river in the Southern district.

Added to delays on account of the revolution were field troubles incident to the rainy season that is well under way. Communication from one part of the Southern district to another is badly hampered.

The No. 22 well, which is slightly southeast of others in the Alamo group, is reported to have got the Tamasopa lime formation slightly higher than No. 21 at approximately 2200 feet, total depth. Various estimates have been made of the new well's producing worth, but a maximum of 15,000 barrels daily is considered probably about correct.

No. 21, reported good for 30,000 barrels at the time of its recent completion, actually made 8,000 barrels daily; and No. 22, being slightly higher in elevation, is rated in conservative estimates at a maximum of 15,000 barrels.

Houston to Build Refinery

SHREVEPORT, Dec. 22.—According to advices from Camden, Ark., officials of the Houston Oil Co. have announced the completion of plans for the construction of a refinery, capacity 5000 barrels, to cost about $750,000. The plant will be built at Camden and will operate next spring.

Hoffer Will Rebuild Fensland Oil Co.

FORT WORTH, Dec. 22.—Temple B. Hoffer has resigned Jan. 1 as vice-president in charge of operations of the Producers & Refiners Corp. and will rebuild the Fensland Oil Co., whose properties went to the Producers & Refiners in the merger of the two companies a year ago. Mr. Hoffer had previously resigned, effective Dec. 1, as director of the Producers & Refiners, following the stock exchange of this company with the Prairie Oil & Gas Co.

The revival of the Fensland, which will not be connected with any other company, was decided upon after an agreement with the Producers & Refiners directors whereby they agreed to turn back the charter of the old Fensland and permits for doing business in various states, to Mr. Hoffer. Headquarters of the Fensland will remain in Fort Worth and its operations, at the outset, will be in Oklahoma, Texas and Wyoming. While final plans have not been completed, it is said the company will become active in those states shortly after the first of the year.

OKMULGEE, Dec. 22.—W. E. Bernard, local geologist for the Gypsy Oil Co., has gone to Pittsburgh to spend his Christmas vacation.

Owsley County Well Is Getting Attention

LEXINGTON, KY., Dec. 22.—Considerable interest is taken by Kentucky operators in the showing of a well drilled by Combs Brothers in Owsley county, south of the Big Sinking development in Lee county. This well, located on the Fred Evans farm, is west of other wells drilled by the same firm, some of which are small producers. The Evans well is reported to have filled up 1000 feet with oil at two screws in the top of the Irvine sand. The development is not far from the big gas field of the Petroleum Exploration, in the same county.

Lion Buys Properties Of Oil Operators

FORT WORTH, Dec. 22.—Sale of the Oil Operators' Trust producing properties to the Lion Oil & Refining Co. in the Smackover field, was announced this week by Judge C. F. Spencer, who, with Dan E. Lydick, of Fort Worth, was appointed receiver for the trust shortly before the death of Marshall E. Spoonts, the organizer.

The sale nets the trust $250,000 in cash, Judge Spencer states, sufficient to pay all indebtedness of the company, while the remainder of the sale price, $2,000,000, will be paid from production. The outstanding capital of the Trust is slightly less than $1,600,000. Belief that the stock will pay out at par was expressed by the receivers, and their attorneys. The sale was made under the approval of the federal court, which ordered the receivership.

Getting Ready To Test Webster Wildcat

SHREVEPORT, Dec. 22.—Construction of two large tanks has been started by the Louisiana Oil Refining Corp. near the Merritt well, Cotton Valley, Webster parish, a new area, to take care of the oil expected from the well when it is opened. The well, drilled by the Oil Fields Gas Corp., is in 14-21-10. The well has been opened for a few minutes twice and flowed at the rate of 900 barrels with no salt water.

TULSA, Dec. 21.—Robert D. Longyear, geologist, representing the E. J. Longyear Diamond Drilling Co., of Minneapolis, has been in Tulsa this week on business for his company.

Shappell's Well In North Texas Continues To Hold Interest

By Special Correspondent

FORT WORTH, Dec. 22.

RAINS, general throughout the district, combined with the usual holiday lull, has slowed up the revival of activity in the North-Central Texas fields. There are however increasingly brighter prospects for the new year, and the oil industry in general is to have a "Happy New Year"; much happier in fact than appeared possible, even so short a time as a month ago.

Stephens county contributed a well of considerable interest, in the Price, Russell & Co.'s No. 2 Bruce, in the Frankell neighborhood, south part of the county. The well is making better than 300 barrels, from the 2,080-foot pay. This is in a section where there has been little activity for months, the last well being completed early in the summer. Much new drilling, to develop already proven area, is in prospect for the immediate future.

In the Curry pool the Weekly Petroleum Co.'s No. 2 Martin had an initial production of 350 barrels, flowing, after a shot of 40 quarts at 3,880. The flow has since stopped, and work to bring production back is under way.

Archer county's chief feature this week was the 900-barrel well of Fain and Murchison, in the Geraldine pool, which aside from its size was important for the slight eastward extension it afforded. The R. M. F. Oil Co. had a 500 barrel well in its completion list, on the Wilson, and there were several wells of better than 200 barrels production.

South Wichita county's wildcat sensation of last week, the T. O. Shappell No. 1 J. L. Jackson is still uncompleted, but is still the center of interest and has stirred up conditions smacking of the old time "boom days" of the years before the slashed crude prices. The new tests provided for by the contracts on acreage are already being started, before the actual completion of the well. So far nothing has occurred to change the original estimates of production, ranging from 150 to 400 barrels. Some water has been encountered, it is reported, but not in quantities to cause alarm.

In the extreme south part of Archer county the Swastika pool is roused from its dormant state of the past months by the promise of an extension of more than a half mile. The McLaughlin et al No. 1 Anderson has the 1,300-foot sand, with the showing reported excellent for a producer.

About five miles northwest of the Swastika pool The Texas Co. is reported preparing to drill a test on the Dormier.

Sale of the 20-acre lease of the Hardy Able Oil Co., in the Swastika pool, to Hobbs, Chenault Burleson, was reported this week. One pumper is included in the property. The consideration was $20,000. The new owners will develop immediately.

Daily Estimated Production of Texas Fields

	Dec. 22	Dec. 15
Mexia-Currie	42,250	41,465
Corsicana-Powell...	88,000	103,000
Wichita Falls Dist.	64,000	63,260
Ranger, lime	37,465	38,650
Ranger, sand, inc. Young, and Shackleford cos.	10,560	11,955
San Antonio, Luling and Mirando ...	15,850	16,400
Coastal Texas	77,700	82,000
Coastal Louisiana	6,735	6,900
	342,560	363,630

NEW YORK, Dec. 21.—Press dispatches from London say that the Angora government has notified the agent of Col. Clayton-Kennedy that the Chester concession for Anatolian (Mosul) development, has been cancelled because of non-fulfillment of contract. This action has been indicated by previous announcements of impending action and recently several of the directors in the enterprise, including Gen. George Goethals, resigned.

TULSA, Dec. 5.—J. A. McNeese, of Ponca City, assistant auditor of the Marland Refining Co., has returned to headquarters after spending two days in the Tulsa office of the company.

CASPER, Dec. 22.—Average daily pipe line runs from the various fields in the Rocky Mountain Region for the week ended Dec. 22 showed a decrease of 9,803 barrels. Comparative average daily runs follow:

Field	Dec. 22	Dec. 15
Salt Creek	113,165	126,257
Teapot	4,430	4,429
Big Muddy	7,000	4,011
Grass Creek	3,260	3,190
Elk Basin	1,500	1,585
Notches	125	132
Greybull, etc.	140	20
Rock River	3,375	3,200
Lance Creek	2,800	3,120
Poison Spider	250	647
Osage	645	600
Hamilton Dome ..	525	522
Lander	480	300
Pilot Butte	85	80
Lost Soldier	5,775	5,785
Ferris	165	100
Cat Creek	4,650	4,480
Kevin-Sunburst .	250	shut down
Miscellaneous	525	540
Totals	149,195	158,998

Completions North-Central Texas Week Ending December 22

Wichita County

Company	Well No.	Lease	Depth	Production
Memphis Petroleum	3	Honaker	1050	40
Panhandle Refining Co	1	Marshall	2200	Aband.
Bradley Oil Co	18	Hirschi	1890	250
Barkley & Meadows	25	Hirschi	1860	140
Magnolia Petroleum	7	Holtzen	1830	40
Magnolia Petroleum	5	Waggoner-A	1670	25

Archer County

Murchison & Fain	1	Wilson-B	1600	900
R. M. F. Oil Co	7	Wilson-B	1600	500
R. M. F. Oil Co	2	S. E. Egbert	1600	225
The Texas Co	9	Carter Bros	1370	100
Sunshine State O.& R.	12	Carter Bros	1585	140
Sunshine State	13	Carter Bros	1583	130
R. M. F. Oil Co	4	Wilson-A	1590	40
Sixty-Six Oil Co	4	Wilson	1600	350
Sixty Six Oil Co	5	Wilson	1595	180
Oil Investment Co	3	Parrish-A	1600	25
Bridwell & Gohlke	1	Wilson	1410	40
Chenault, Lea & Johnson	6	Wilson	1590	100
Chenault, Lea & Johnson	7	Wilson	1590	50
Ferguson et al	1	Jackson	1790	Aband.
J. E. Dale et al	7	Wilmot	1600	100
E. R. Fain, Trustee	1	Wilson	1600	35

GENERAL RANGER TERRITORY

Young County

Shamrock Oil Co	1	Glidewell	2400	15

Stephens County

Company	Well No.	Lease	Depth	Production
Price, Russell & Co	2	Bruce	2680	300
Magnolia Petroleum	4	Rush	3070	8 m. gas
Magnolia Petroleum	12	Rush	3230	60 bbls., shot 75 qts.
Weekley Petroleum Co	2	Martin	3880	350 bbls., shot 40

Shackleford County

Humble Oil & Refining	1	Elliott	2140	Aband.

Palo Pinto County

E. Danielson, Trustee	1	Hemphill	3750	temp. aband.
Republic Production Co	1	Stuart Bros	2860	Aband.
Harris et al	1	Weldon	2650	temp. aband.

Eastland County

Humble Oil & Refining	4	Merrill	1235	30
Gates Oil Co	4	Hankins	2610	50

Brown County

Bob Gillman et al	4	W. J. Newton	1300	30
Gillett et al	2	Prather	1310	45

Powell Completions

Navarro County

Gulf Production	15	Crews	2975	350
Sun Oil Co	1	Barron	2995	100
Simms Oil Co	1	J. A. Boyd	2985	100
Atlantic Oil Prod	10	Kellum	2060	3 m. gas
Mutual Oil Co	7	Howell	2945	Salt water

Kansas Wildcats Center Of Interest May Open New Pools

By A. F. Hinton
STAFF REPRESENTATIVE

TULSA, Dec. 22.

THE crude-price raising epidemic seems to be spreading over the country, each week bringing its tidings of an outbreak of it here and there, but so far the Mid-Continent district has escaped contagion. It is known to be "catching," however, and Oklahoma crude is not immune. It will probably take about ten days now for the malady to develop fully in this particular area.

No Raise Until 1924?

In others words, there does not seem any doubt that Mid-Continent crude is going up, the only question being "when?" It has been predicted in these columns that the ascent will not begin until after the first of the year, and we are still sticking to it. There are many, however, who believe that it will come before then, this belief having been strengthened by the recent increases in Pennsylvania and Central States crudes.

Crude in Demand

In the meantime, there is no let-up in the keen competition for crude which has been in evidence among the oil buyers for several weeks past. This is resulting in a general tying up of crude by the larger companies, as they are contracting for production wherever they can find it. As long as Oklahoma's production continues on its present downward trend, it appears that Independent refiners are going to have difficulty in obtaining any crude at all when they need it again. A few offers of premiums have come to light already, but the practice has not become general.

Each week sees a continuation of the decline which has characterized Oklahoma's production for several months past, and every day that this continues naturally makes the situation look better from the producer's standpoint. It is evident that the lifting of proration has not had the expected effect of causing production to take a decided upward turn. On the contrary, the older fields of the state have increased only slightly since full runs returned, while the flush fields have been declining rapidly, taking the state's total down with them.

The Mid-Continent is approaching a period, therefore, when its production probably will not be sufficient to supply the demand for it, and with no new fields in sight to cause it to increase. Several months necessarily would have to elapse before any new field, if and when discovered, could have important effect on the state's output, and in the meantime, Burbank is the only visible source of added production.

Producers Going Slow

Producers are holding off noticeably in starting new work, even under the stimulus of competitive crude buying and declining production, and thus are daily strengthening their position, for every day's delay in the opening of a general drilling campaign makes that much more certain the early coming of substantially higher crude prices. It is evident that crude must go up before producers generally will desire, or be able, to do the drilling necessary to bring in new fields. Oil at its present price certainly holds out no attractions for the wildcatter, and a great many producers were too nearly prostrated during the recent depression to be financially able to undertake a drilling campaign now.

Current Production

Burbank, Tonkawa and Wewoka continued their decline during the past week, and, as no other field made gains to correspond, the state as a whole fell off better than 6400 barrels as compared to the foregoing week. Oklahoma is now averaging 371,891 barrels daily, according to estimated figures, which it is the lowest it has reached this year. Burbank, with 1113 wells, the same number as last week, declined 2456 barrels, averaging 73,967 barrels daily during the week. Tonkawa added one well for a total of 610, but declined 2239 barrels, its daily average being 44,907 barrels. Wewoka has the same number of wells as last week, and its daily average declined 1984 barrels to 11,877. Only minor changes are reported in other fields in the state. Kansas averaged 71,285 barrels daily during the week, a decrease of 360 barrels.

Wells Completed

In Oklahoma, during the week just closed, 43 wells were completed, of which 21 were oil wells, 11 were gas wells, and 11 were dry holes. This compares with last week's figures of 56 completions, divided 26 oil wells, eight gas wells, and 22 dry holes.

The 21 oil wells completed this week had a total initial production of 5375 barrels, an average of 256 barrels per well. Last week 26 wells brought in 4481 barrels of new production, with a well average of 172.3 barrels. Nearly half of this week's total of new production is accounted for by the Red Bank Oil Co's. 2400-barrel well in the Osage, which is included in the list this week.

No completions were reported from Kansas this week. Last week there were three, one of which was an oil well and the other two gas wells.

Drilling Operations

Out of 1272 field operations under way in Oklahoma, there are 53 locations, 221 rigs, 544 wells drilling, and 454 wells shut down. These compare with last

Daily Average Production Oklahoma and Kansas Estimated

Oklahoma	Dec.	Dec. 15
Bristow	48,275	48,500
Burbank	73,967	76,423
Cushing	25,125	25,400
Healdton	17,480	17,365
Hewitt	21,250	21,500
Tonkawa	44,907	47,146
Osage, except Burbank	29,760	29,325
Wewoka	11,877	13,861
Oklahoma, general	99,250	98,800
Total	371,891	378,320
Decrease		6,429

Kansas		
Augusta-Douglass	3,300	3,325
Blankenship Dist.	2,455	2,480
Elbing-Peabody	8,200	8,300
Eldorado	17,140	17,280
Florence District	4,250	4,235
Fox-Bush	5,200	5,225
Greenwood County	17,300	17,300
Leon & Weaver	1,000	1,100
Kansas, general	12,440	12,400
Total	71,285	71,645
Decrease		360

week's total of 1277 operations, divided 61 locations, 209 rigs. 547 drilling and 460 shut down. This indicates a decrease of three drilling wells and an increase of 12 rigs. Southern Oklahoma, with 18, and Bristow, with 10, reported the greatest increases in drilling wells. Burbank drilling wells were fewer by nine this week than last week, while Wewoka reported a loss of six drilling wells. Kansas operators evidently are in shape to go ahead with new work, as there are 72 wells drilling there this week, as compared with 60 last week, with an increase of five rigs and a decrease of five shut downs.

Figures showing field operations in the various districts of Oklahoma, Kansas and North Texas are given in the accompanying table. The totals show a decrease for the entire district of 13 drilling wells and 10 shut downs. with 2064 total operations this week as compared with 2069 last week.

Drilling Operations, Oklahoma, Kansas and North Texas, Dec. 15-22

Oklahoma	Dec. 15 Loc.	Rigs	Drg.	S.D.	Week Total	Ending Dec. 22 Loc.	Rigs	Drg.	S.D.	Total
Burbank	13	23	33	103	172	11	30	24	111	176
Other Osage	7	13	37	23	80	8	17	31	23	79
Bristow	2	18	32	33	85	2	18	42	26	88
Cushing	7	11	44	29	91	4	11	39	34	88
North Oklahoma	5	9	47	41	102	5	7	48	40	100
South Oklahoma	5	28	176	131	340	5	25	194	114	336
Muskogee	0	5	23	32	60	0	7	15	38	60
Okmulgee	3	50	41	36	130	3	54	46	34	137
Tonkawa	2	30	30	11	73	2	28	27	11	68
Wewoka	17	22	84	21	144	13	24	78	23	138
Total Oklahoma	61	209	547	460	1277	53	221	544	454	1272
Kansas	29	50	60	80	219	29	45	72	75	221
North Texas										
Eastland Co	0	8	23	9	40	0	7	21	12	40
Stephens Co	0	17	22	39	78	0	22	19	38	79
Tex. Panhandle	0	6	18	12	36	0	6	18	12	36
Mexia (Powell)	0	10	84	9	103	0	4	66	14	84
E. Texas Wildcats	0	8	24	49	81	0	23	29	42	94
W. Texas Wildcats	0	38	82	115	235	0	44	78	116	238
Total N. Texas	0	87	253	233	573	0	106	231	234	571
Grand Total	90	346	860	773	2069	82	372	847	763	2064

Kansas Wildcats Promising

Kansas boasts the two outstanding wildcat developments in the Mid-Continent at present, and both of them are attracting a great deal of interest just now. One is the Valerius well in Russell county, out in the great open spaces of the west, a good 150 miles from any other production. The other is the Waite Phillips wildcat in Cowley county, nearer to production, but a rank wildcat, nevertheless, and an important one, too.

The Valerius well presents a number of peculiarities which make it interesting, aside from its remote location. The crude from this well comes to the surface at a temperature of 34 degrees F., said to be the lowest temperature of any oil heretofore found in the Mid-Continent field at its depth. which is 2998 feet. The crude tests 41 to 42 degrees gravity, and is of a much darker color than most other crudes of this high gravity. It is said to run from 38 to 40 per cent gasoline, which is the highest gasoline content yet recorded for Kansas oil.

Since drilling the well three feet into the producing formation, to a total depth of 3001 feet, it has filled up with oil at a regular rate in the intervals of swabbing, and has been making from 150 to 175 barrels a day. While there is considerable gas in evidence. there is very little rock pressure, and the well does not flow naturally. It is possible that this lack of rock pressure may be attributable to faulting in the formation, which may have caused migration of the oil from one stratum to another.

The producing horizon of the well has not been definitely identified. At its present depth it is in a dolomite lime, of a decidedly brown color. and heavily saturated with oil. The well had three oil showings and three gas showings on the way down, in addition to the one from which it is producing. One of these oil showings was between 2945 and 2960 feet where the well showed for about 10 barrels of 28-gravity oil.

The well went through about 390 feet of Cretaceous formation from the surface, being in the Benton limestone to 141 feet, and from there to 390 feet in the Dakota sandstone. At the base of the Dakota, it reached the formation in which the Barton county well in the Cheyenne Bottoms started. This well, which was brought in last year, but which never has been completed as a commercial producer, had its first showing at 3200 feet. This would correspond roughly to a depth of 3590 feet in the Valerius well, indicating that other oil-bearing formations might be encountered by deeper drilling.

Drilled With Cable Tools

The well was drilled in about 75 days' drilling time, although the operators state that the next one probably will not require so long. Principal drilling difficulty experienced was with cavey hole, as most of the formations passed through were soft and crumbly. Water was encountered several times. but not in sufficient quantity to cause much trouble. Cable tools were used in drilling the well, and it is thought the rotary would not be a success here, on account of the fact that several hundred feet of iron pyrites concretions were encountered, which probably would make hard going for a rotary.

Near Transcontinenal Line

Sinclair Crude Oil Purchasing Co., is now stringing three-inch pipe for a 10-

Completions In Oklahoma Week Ending December 22, 1923

OKLAHOMA

Caddo County

Company	Well No.	Location	Depth	Initial Production
Birmingham-Kelsey	1	SWc NE 8-11-12W	T.D.3509	Dry

Carter County

Company	Well No.	Location	Depth	Initial Production
Texas Co	3	NE SE 31-2S-2W	3196–3340	40
Red Oil Co	2	NW SE 31-2S-2W	3004–3017	80
Graham Min. Trust	11	NW NE 31-2S-2W	2116–2197	50
Merrick-Kirk	1	SW NW 5-3S-2W	2804–2809	200
Magnolia Pet	1	SE SE 25-3S-1W	T.D.3365	Dry

Creek County

Company	Well No.	Location	Depth	Initial Production
Sapulpa Ref. Co	2	NW NE 34-15-10	2638–2656	70
Prairie O. & G	3	30-14-8	3401–3404	720

Grant County

Company	Well No.	Location	Depth	Initial Production
Blackwell O. & G	1	NW NW 26-27-3W	4005–4015	3½M

Hughes County

Company	Well No.	Location	Depth	Initial Production
Indep. O. & G	1	NEc NW 23-8-10	T.D.4253	Dry

Kay County

Company	Well No.	Location	Depth	Initial Production
Blackwell O. & G	7	SE NW 34-25-1W	2460–2497	205
Comar Oil	12	S½ NW 34-25-1W	2503–2527	20

Muskogee County

Company	Well No.	Location	Depth	Initial Production
Roxaline Oil Co	5A	SWc SE 24-14-16	1724–1725	Dry

Noble County

Company	Well No.	Location	Depth	Initial Production
Gypsy Oil Co	64	S½ NW 2-24-1W	2517–2529	125
Comar Oil	21	c SW 2-24-1W	2538–2611	20
Comar Oil	12A	SE SE 3-24-1W	2090–2109	48
Healdton O. & G	8A	NE NW 11-24-1W	2589–2616	95
Prairie Oil	7	10-24-1W	2595–2642	10

Okmulgee County

Company	Well No.	Location	Depth	Initial Production
Wiser Oil Co	2	SW SE 11-18-12	2832–2840	12M
Charles King et al	1	W½ SW 11-11-13	1990–1996	2½M
Sheridan Oil Co	3	SW SW 22-16-12	2539–2549	200
C. E. Campbell	4M	SW NW 30-13-15	2812–2845	3M
Anglo-Texas Co	1	SEc 29-12-11	T. D.3870	Dry
W. R. Sommerville	1E	SE NE 2-15-14	T.D.1420	Dry

Osage County

Company	Well No.	Location	Depth	Initial Production
F. A. Gillespie	21	NE NE 8-20-12	1960–2053	20
Barnsdall Oil	17	NE NW 9-20-12	Sand 2038	25
Munn Bros et al	4	NW NE 28-20-12	2034–2040	850
S. S. Home	76	SE SE 35-22-8	1630–1650	8M
Owen-Osage	256	NW SE 9-22-11	2098–2137	1½M
Red Bank Oil Co	2	NEc NW 29-23-8	2790–2825	2400
Gilliland Oil	3	NEc NW 23-23-10	1732–1812	15
Petroleum Drill	6	NE SE 17-25-9	1590–1602	1½M
Finance Oil Co	3	SW NW 26-23-11	T.D.2125	Dry
Sinclair Oil	14	NE NE 19-27-6	T.D.2958	Dry

Seminole County

Company	Well No.	Location	Depth	Initial Production
Davis-Crosby-Sloan	1	NE SW 28-8-8	T. D. 3265	22
Atlantic-Indep	3	SW NE 32-8-8	3109–3120	160
T. B. Slick	1	NWc NE 25-6-6	2212–2215	5M

Sequoyah County

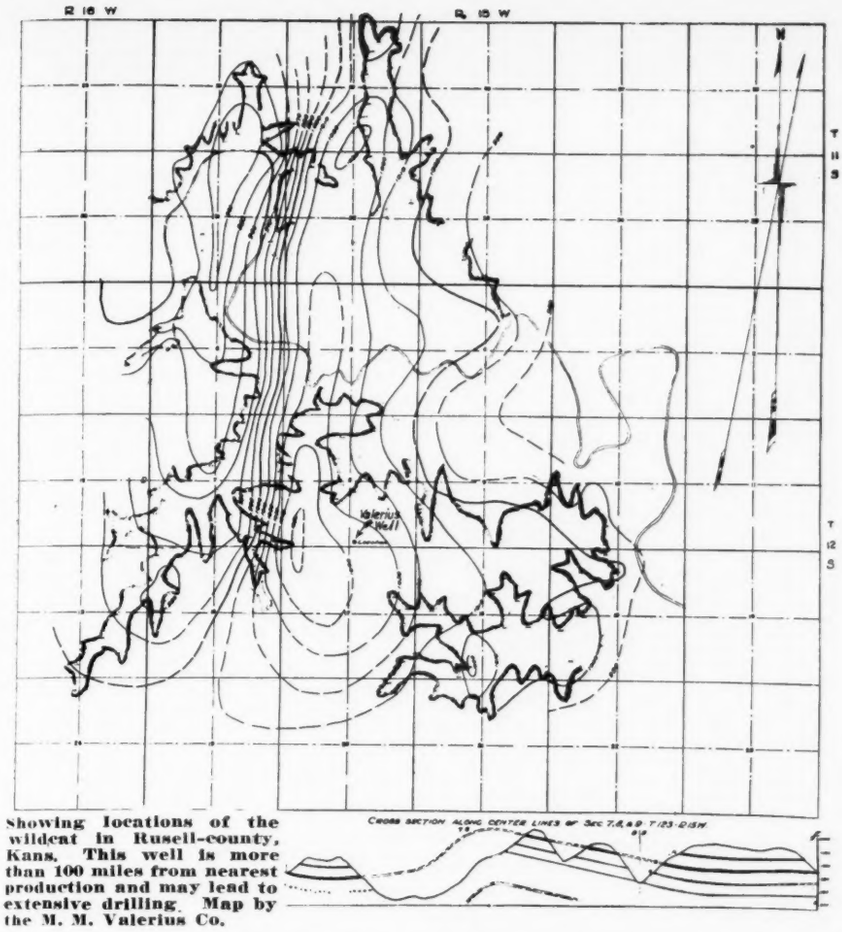
Company	Well No.	Location	Depth	Initial Production
Mathews Oil Co	1	NWc NW 1-11-21	T.D.1020	Dry

Stephens County

Company	Well No.	Location	Depth	Initial Production
C. & O. Drill. Co	1	NW NW 30-1-8W	2251–2255	9M

Tulsa County

Company	Well No.	Location	Depth	Initial Production
S. S. Home	2	SW NE 6-19-12	1649–1654	4M
P. Short	5	SE NW 3-19-12	T.D. 450	Dry
Hancock et al	1	SE NW 6-18-13	T.D.2062	Dry



Showing locations of the wildcat in Russell-county, Kans. This well is more than 100 miles from nearest production and may lead to extensive drilling. Map by the M. M. Valerius Co.

mile line from the well to Paradise, a small town on the Union Pacific railroad, where a loading rack will be built. The well is about equidistant between the main line of the U. P. to the south and a branch to the north, but investigation by the Sinclair company revealed that an advantage of about one and a half cents a barrel in freight rates could be had through use of the branch line. It is worthy of note that the well is only about 90 miles south of the transcontinental line now being built by Sinclair from Wyoming to Kansas City, so that company will be well situated in the event that an important field is the result of the Valerius discovery.

The Valerius Co. is starting another test on a block of 6000 acres, at a point about nine miles northeast of the town of Russell, but is not yet ready to announce the exact location. The present well, which is in the SE¼ SW¼ of 8-12-15W, is 18 miles northwest of Russell, county seat of Russell county. In the locality of the Cheyenne Bottoms well mentioned, the two towns of Ellinwood and Great Bend have gone in on a 50-50 proposition and will drill a "community well" half way between the two towns, which will place the test somewhere in township 19-12W. This well will be drilled by electricity, according to reports.

Cowley County Well Also Important

There are possibilities that another Burbank field may be the result of the discovery well drilled by Waite Phillips Co. in the NWc SE¼ of 20-33-3E Cowley county, Kansas. This well, which is known as No. 1 Levi Johnson, is making 328 barrels at 12 feet in pay sand topped at 3200 feet. The oil is of 42 gravity. It is believed by some geologists that the sand in this well is the same as that found in the Burbank field, although this point as yet has not been definitely determined. It is interesting to not that the well is on a direct line with the northwest trend of Burbank, and is about 27 miles from the farthest northwest production in that field. It is also worthy of note, perhaps, that the line connecting Burbank's northwest corner with the Waite Phillips well also comes close to the Valerius well described previously in this article.

A "Natural" Wildcat

The Waite Phillips well had an auspicious start on its career, as its surface elevation is 1111, a number dear to any gambler's heart, and it is located in the Rainbow bend of the Arkansas river, where a pot of gold should be lying somewhere around. The nearest production of any kind to the well is the shallow stuff lying east of Winfield, and 15 or 18 miles distant. The nearest production from depths approaching that of the Phillips well is the Burbank field to the southeast and the Augusta and Eldorado fields about 35 miles to the north and east. The well is located over the buried granite ridge which is known to run south and southwest from Nemaha county down through Butler county. A number of fields are located along this trend, among which Eldorado and Augusta are the most important. The Phillips well, however, is in a true sand, according to officials of the company, and not in the lime.

Acreage upon which this well is located was blocked up by M. W. Baden, a geologist of Winfield, and the Waite Phillips Co. took it over from him. The Waite Phillips Co. has made two locations offsetting the well to the north and west, and will drill them at once. They will be known as the No. 1 Wertman and the No. 1 Glasgow, respectively.

Harry Morris And Others Are Held For Trial

SHREVEPORT, Dec. 22.—Harry Morris, Otto Morris and Mike ((Harold I.) Lyvers, charged with using the mails to defraud in the promotion of alleged fraudulent oil companies in Arkansas, who with others were indicted in the federal court at Texarkana, Ark., were arrested as fugitives from justice from Arkansas and were released on bonds returnable at Texarkana. After preliminary hearing before United States Commissioner Cecil Morgan, each of the Morris brothers, Shreveport citizens, was released under two bonds totalling $25,000 and Lyvers' bond was fixed at $5,000.

Indictments returned in alleged fraudulent oil schemes by the court at Texarkana total 33. B. L. Guice and John Barrett, it is reported from Texarkana, will go to trial under the indictment there after serving terms in Leavenworth imposed in Chicago on similar charges. Other defendants, who are under bond, include Gordon Ingalls, Robert Edmond Ingalls, Ray Baker and W. S. Eakens.

P. & R. To Drill Two New Mexico Domes

DENVER, Dec. 22.—A contract has been made whereby the Producers & Refiners Corp. will test the Tocito structure, on Navajo lands, northwestern New Mexico, for the Gypsy Oil Co., which latter company purchased the exploratory lease on 4000 acres on Tocito for $46,000 at the Oct. 15 sale. Producers & Refiners had claimed the structure under lease executed prior to the sale but the claim was not allowed. A rig had been moved in and camp had been placed before the sale was held. This will now be used and the hole drilled on footage basis.

Producers & Refiners will also drill the Table Mesa structure on the Navajo land on its own account. Lease on this is held by A. E. Carlton, of Colorado Springs, who purchased it at the sale for $17,000. Lease consists of 17,000 acres. The Dakota, which is the producing formation on the Hogback, where the Midwest has four producing wells, is expected at Table Mesa at about 1200 feet.

May Revive Oklahoma Geological Survey

TULSA, Dec. 21.—When Jack Walton was governor of Oklahoma, he vetoed an appropriation of $110,000, which was to have been used for maintenance of the Oklahoma Geological Survey during the ensuing two years. By this action he abolished the Survey, which necessarily ceased to function when its financial support was withdrawn.

Efforts are now being made by geologists and oil men to have the Survey re-established, and it is reported that the new administration looks with favor on the proposal. During the past week, a committee of geologists went to Oklahoma City and presented the case to Governor Trapp and other state officials.

It is estimated that $30,000 will be needed for the current year, to pay off debts, have printed some of the many reports which have not yet been published, and pay the salaries of a geologist in charge and his assistants. If the governor finally approves the proposition, it will be put up to the legislature when it convenes in extraordinary session early in January.

Many valuable reports of geological field work laboriously performed by Survey men under former administrations have never been published, some of them having been gathering dust in the Survey's archives for ten years or more. The plan is now to start publishing these reports as fast as possible, as many of them contain information which will prove highly valuable to oil men, and which is not generally accessible elsewhere.

It is hoped that the survey will become self-supporting under the new regime. This will be accomplished by charging reasonable prices for maps and bulletins issued, instead of passing them out free, as has been done in the past, on the theory that most men interested at all in the survey's publications will be willing to pay reasonably for them. In this way, it is believed that each publication can be made to pay for itself.

One interesting bulletin which has been published by the survey, but which cannot be made available until the printers' bills have been paid, is that covering results of geological work by C. W. Honness in Le Fuore and McCurtain counties. This is a very difficult section of the state geologically, and little is definitely known of it. Mr. Honness spent many months in his investigations. At a meeting of the Tulsa Geological Society last year, he gave a digest of his report, and it aroused a

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LOS ANGELES, Dec. 22.—Arrangements have just been completed for the opening of a branch factory of the Chain Belt Company at 210 South San Pedro street, in this city. Plans for the factory were made by C. F. Messinger, vice-president, and Brint Wesler, assistant secretary of the company, and both have returned to Milwaukee.

It is said that ample stocks will be carried at the new branch, at all times, to facilitate supplying the trade without delays. It is understood that the branch will not affect the status of supply dealers. The office will be conducted by J. V. McDonald who has been representing the company in this state.

LOS ANGELES, Dec. 24.—California production in week ended Dec. 22 was down 13,000 barrels on the daily average from the average of the preceding week. Average production figures for two weeks follow:

	Dec. 22	Dec. 15
Santa Fe Springs	180,000	190,000
Long Beach	220,000	230,000
Huntington Beach	68,000	65,000
Torrance	38,000	34,000
Compton	1,350	1,350
Rest of state	194,000	194,000
Total	701,350	714,350

Absaroka Drilling Again

BILLINGS, MONT., Dec, 22.—Drilling has been resumed in the test of the Absaroka Oil Development Co. and the Florence Oil Co. in Fallon county, southeastern Montana, after a shut down for some time while a new string of 8¼-inch casing was being shipped in. Drilling was started again at 3650 feet.

Burbank Output Exceeds 50 Million Barrels

WASHINGTON, Dec. 21.—A total of 50,468,774 barrels of oil has been taken from the Burbank oil field on the Osage Indian Reservation in Oklahoma up to Oct. 1, 1923, according to the latest figures compiled by the Bureau of Indian Affairs of the Department of the Interior.

This field, the richest in the world, has been in operation since 1918. The mineral rights, belonging entirely to the tribe of Osage Indians, have yielded these Indians in royalties and bonus the tremendous sum of $54,744,000 during this period of six years, $37,856,000 of which has been paid by oil operators as bonuses for leases and $16,888,000 which has been paid as royalties from the oil produced.

All told 1056 wells have been drilled by the score or more of oil companies that have secured leases on the tracts of land composing the Burbank field. The highest bonus paid for the privilege of drilling on any single quarter of land was $1,600,000 and that the oil operator made no mistake in paying this immense sum is illustrated by the fact that up to October 1 of this year, wells on this quarter of land alone have produced 1,834,082 barrels of oil.

The distribution of the immense income from the Burbank field is made every month pro rata to the members of the Osage Indian tribe.

The Cromwell Oil & Gas Co., Glendenin, W. Va., has been incorporated at $30,000 by W. L. Cromwell, J. G. Osborne, James M. Gray F. W. Pierson and Roy Ray.

Gulf Coastal Water Shipments, November Compared With October

(All figures in barrels of 42 gallons)

Company—Port	Coastwise Refined October	Coastwise Refined November	Export Refined October	Export Refined November
Standard of Louisiana, Baton Rouge	569,131.00	647,497.00	761,684.00	270,166.00
The Texas Co., Port Arthur	1,038,191.00	831,722.00	309,790.00	288,464.00
Gulf Refining Co., Port Arthur	1,702,947.93	1,541,060.71	374,784.87	220,970.90
Magnolia Petroleum Co., Beaumont	616,045.00	823,544.00*	.....	.....
Sinclair Refining Co., Houston	68,670.00	45,948.00	112,749.00	28,000.00
Galena Signal Oil Co., Houston	56,000.00	54,000.00	80,000.00	.....
Deepwater Oil Refineries, Houston	.....	.....	.....	56,000.00
Totals	4,050,984.93	3,943,771.71	1,639,007.87	863,600.90
	Coastwise Crude		**Export Crude**	
Standard of Louisiana, Baton Rouge	350,636.00	138,215.00	.....	.....
The Texas Co., Port Arthur	266,667.00	389,537.00	.....	15,725.00
Gulf Refining Co., Port Arthur	139,059.27	78,337.66	.....	.....
Magnolia Petroleum Co., Beaumont	308,508.21	199,834.76*	.....	.....
Sinclair Refining Co., Houston	158,725.00	.....	.....	.....
Sun Oil Company, Sabine Pass	.....	338,443.00	.....	.....
Humble Oil & Refining Co., Texas City	1,701,323.00	2,515,922.00	.....	221,541.00
Vacuum Oil Co., Texas City	147,288.00	149,129.00	.....	.....
Humphreys Pure Oil Pipe Line Co., Smith's Bluff	92,859.58	207,699.88	.....	.....
Totals	3,165,066.01	4,017,118.30	.....	237,266.00

NOTE: *—Magnolia makes no distinction in reports between coastwise and export shipments.

Shreveport Area Gains In New Production Over Past Week

By Special Correspondent

SHREVEPORT, Dec. 22

TWENTY-THREE completions, including four gassers, two failures and 17 producers with combined initial yield 4325 barrels, was the record of the Shreveport territory, embracing south Arkansas fields, during the week just closed. The initial yield showed an increase of 2,130 barrels compared with the record of the preceding week, when there were 21 wells completed, of which two were gassers, one a failure and 18 producers with combined initial production 2,195 barrels.

Daily average production during the week just closed totaled 172,214 barrels, compared with 173,627 the preceding week, a decline of 1,413 barrels for the seven days.

After a dormant period of several weeks, Nevada county, Arkansas, again broke into the production column with two wells whose combined initial yield totaled 150 barrels.

The Stephens district of Arkansas, which the previous week was out of the completion column, returned to that column with two producers whose initial yields totaled 70 barrels.

The Bellevue shallow field of Bossier parish, Louisiana, continues to be the most consistent producing area in north Louisiana, its record for the week just closed being three completions, all producing wells, with combined initial yield 115 barrels.

The Wistar (Elm Grove) gas field of Bossier parish recorded one gasser during the week, while Ouachita parish, in northeastern Louisiana, recorded three gassers compared to no completions the preceding week, and Morehouse parish, which had two gassers to its credit the week before, was out of the completions column this week.

SHREVEPORT, Dec. 22.—Daily average production during the week just closed showed a decline of 1413 barrels, the total being 172,214 barrels compared with 173,627 barrels the week before. By districts, the daily average production in north Louisiana and south Arkansas for the weeks ended Dec. 20 and Dec. 13 follows:

Daily Average	Dec. 20	Dec. 13
Caddo, light	8,322	8,432
Caddo, heavy	2,174	2,212
Red River-DeSoto	6,324	6,280
Haynesville	20,928	21,930
Homer	9,022	8,896
Bellevue	5,210	6,385
ElDorado	16,940	17,996
Smackover	100,320	98,146
Stephens	2,974	3,350
Total	172,214	173,627
Decline	1,413	

The Smackover, Arkansas, district showed an increase in initial yield but fell off in number of new wel's, its record for the week being two failures and nine producers with total initial production 3,865 barrels compared with the previous week's showing of 14 producers yielding 2,065 barrels. The largest completion of the week was in the Smackover district, being the Higgins Oil & Fuel Co.'s Murphy A-3 in 14-16-15, at 1995 feet, initial yield 2500 barrels.

Caddo parish reported one 125-barrel producer compared with one 25-barrel producer the week before. This was the only new producer in north Louisiana outside of the three in Bellevue.

In Red River parish there was no completion, compared with a 20-barrel well the week before.

DeSoto, Homer, Haynesville and east Texas all remained out of the completions column during the week.

Completions in North Louisiana and Arkansas, Week Ended Dec. 20

Company	Well	Location	Depth	Yield
LOUISIANA				
Caddo Parish				
Muslow Oil Co.	Brown Fee No. 2	32-21-15	2135	125
Bossier Parish—Bellevue				
Olmstead et al.	Strange A-11	23-19-11	295	30
Olmstead et al.	Strange A-12	23-19-11	315	25
R. O. Roy	Scanland No. 27	15-19-11	380	60
Bossier-Wistar				
George O. Baird	Montgomery No. 2	18-16-11	840	10 m. gas
Ouachita Parish				
Chester Carbon Co.	Flournoy No. 1	22-19-5E	2320	2 m. gas
Cosmos Carbon Co.	Handcock No. 2	20-19-5E	2265	10 m. gas
Consumers Carbon Co.	Richie No. 2	32-19-5E	2215	12 m. gas
ARKANSAS				
Nevada County				
Ames et al.	Waters No. 4	11-14-21	1175	125
Dixie Petroleum Co.	R. P. Womack No. 2	10-14-21	1196	25
Stephens				
Hickman Drilling Co.	Smart No. 1	14-15-20	2125	20
Magnolia Petroleum Co.	Hammond No. 3	25-15-20	2115	50
Smackover				
J. D. Reynolds	Wells No. 1	25-15-17	2304	50
Bradstreet Oil Co.	Robinson No. 2	25-15-16	2050	junked aband
El Dorado Gas Co.	Hicks No. 1	27-15-16	2295	s. w. aband.
Hunt et al.	Solmson No. 2	30-15-16	2285	300
Humble Oil & Refining Co.	C. L. Saxon No. 2	32-15-16	2265	80
Snowden & McSweeney	Taylor No. 2	29-15-16	2290	350
Barnsdale-Foster	J. Murphy No. 4	17-16-15	2125	500
Crosby et al.	Harrell No. 2	17-16-15	2065	35
Crosby et al.	Graves No. 1	17-16-15	2035	25
Texas Oil Co.	J. T. Murphy No. 2	22-16-15	2060	25

Joseph Pogue To Speak On Oil Production

WASHINGTON, Dec. 22.—The American Statistical Association, which is to meet in Washington, Dec. 27-29, will devote the afternoon of Dec. 28 to mining. This session will be presided over by John Hays Hammond. It will consider how the mining industry has been affected by the recurring periods of prosperity and depression and the statistical basis for analyzing the current economic situation of mining, with some discussion on making forecasts.

Joseph E. Pogue, of New York, well known consulting engineer and petroleum economist, will present a paper on "The Effect of New Technique on the Past and Future Production of Petroleum." A brief summary of this paper is as follows:

1. The rate of increase in crude oil production in the United States, which averaged 7.1 per cent per annum over the period 1907-1919, underwent an acceleration to an average rate of 16.6 per cent per annum over the period 1919-1923.

2. This sharp increase in momentum was the result of improved technique in oil finding and oil production, under the stimulus of an extraordinary flow of new capital into the petroleum indusery attracted by the idea that an oil shortage lay ahead.

3. The simultaneous development of improved technique in refining, leading to the larger extraction of gasoline from crude oil, also stimulated by capital inflow induced by the shortage idea, retarded the demand for crude oil to the extent that roughly two-thirds of the impetus of crude oil production derived from improved technology was in excess of economic requirements and led to overproduction.

4. The low prices caused by the resulting period of over-production have created a sufficient check on the momentum of oil production to substantially decrease the rate of increase probable for 1924.

5. In the near future the factor of resource limitation may be expected to create a further check on the momentum of crude oil production, and the tentative conclusion is offered that 1924 will witness the beginning of a change in the trend of crude oil production to a gentler gradient.

Some Methods Of Dealing With Paraffin Problems In Oil Wells

By R. Van A. Mills,
Petroleum Engineer, U. S. Bureau Of Mines

Part 1

THE so-called paraffin that collects in oil wells and in the pores of the oil-producing sands immediately around the wells, is generally made up of amorphous wax or uncracked paraffin, asphalt, or other gummy hydrocarbons mixed with more or less water, oil, and inorganic silt. Some of the samples of this "paraffin" collected from oil wells in different fields and examined by the Bureau of Mines contain as much as 20 per cent by weight of water and inorganic silt, whereas other samples are composed entirely of waxy hydrocarbons and oil. The inorganic silt accompanying this "paraffin" is mostly fine sand, clayey materials, common salt and finely disseminated precipitates of calcium and magnesium carbonates. Sulphates of calcium, barium, and strontium are less common constituents of the "paraffin".

The "paraffin" material from oil wells varies in consistency from soft grease-like materials resembling vaseline to hard wax-like masses resembling the natural wax ozokerite. The melting points and solubilities have a wide range of variation depending upon the composition and consistency of the paraffin. These relationships are illustrated by the results of preliminary laboratory tests (determinations of approximate melting points and solubilities) presented in Tables I and II.

The "paraffins" from oil wells are generally less soluble and have higher melting points than commercial paraffin. At temperatures above their melting points, indefinite quantities of these materials liquefy and combine with the solvents or with crude oil. Under such conditions, where hot solvents or crude oil contains high concentrations of melted paraffin, when the temperature falls below its melting point a large part of the paraffin tends to congeal immediately. Heating the solvents to temperatures slightly below the melting points of the oil-well "paraffins" generally increases the dissolving action, but with the waxy paraffin from the Garber field, Oklahoma, the solubility decreased as the temperature was raised.

Mr. Mills, who has made extensive investigation of this and related subjects pertaining to oil production, presents in summary form some of the conclusions reached as to causes of paraffin deposits and methods for its removal. Admittedly, no method has yet been found that will do the work under all conditions. Mr. Mills tells of the disadvantages of most of them that have been attempted but it might be added that the cost prohibits the use of some.—Editor.

The low solubilities of the paraffins at ordinary temperatures and their tendency to separate out when hot solutions are slightly cooled tend to render more difficult the successful use of solvents for cleaning out oil wells.

Causes for Paraffining

The principal causes for the deposition of the so-called paraffin are:

(1) The chilling incident to the sudden reduction of pressure and expansion of gas in the wells and in the producing sands close to the wells. (Lowering the temperature only a fraction of a degree often causes the deposition of paraffin from oil containing its full capacity of dissolved paraffin).

(2) The diminished solubility of the paraffin at the lowered pressures generally prevailing in the wells. (Paraffin is soluble in oil and gas at higher pressures).

(3) The churning action of the pumps and sucker rods which tends to accentuate the emulsification of water, oil and silt.

(4) The evaporating and drying action of natural gas. The evaporation of the more volatile constituents of the oil leaves behind the paraffin residues to be deposited in the wells and productive sands.

(5) The alternate wetting and drying of the productive sand exposed in a well where the fluid level is repeatedly lowered from the top to the bottom of the sand by pumping. Expanding gas tends to chill and dry the uncovered surfaces of sand. This wetting and drying cycle is comparable to repeatedly painting the exposed faces of the sand with paraffin.

(6) The leakage of certain kinds of water into the wells, especially water carrying mechanically suspended silt or waters that carry dissolved salts which act chemically with the salts dissolved in other waters in the wells so as to form silty precipitates. The loss of carbon dioxide gas along with other dissolved gases from waters containing bicarbonates also causes the precipitation of silty carbonates, more especially calcium carbonate. The fine particles of silt seem to form the nuclei about which the oil and water emulsify to form some of the so-called paraffin materials.

The deposition of the paraffin and associated substances upon the faces of the

Table I

Relative Solubilities of Different "Paraffins" in Different Solvents at 85°F.

(Solubilities expressed in Percentages)*

	BENZOL (90% grade) Spec. Grav. 0.880 at 60°F.	GASOLINE (Motor grade) Spec. Grav. 0.753 at 60°F.	NAPTHA (Com. grade) Spec. Grav. 0.759 at 60°F.	KEROSENE (Water. white) Spec. Grav, 0.800 at 60°F.
Commercial paraffin (Melting point 123°F)	92	36	46	30
Soft "paraffin" from oil-well tubing, Salt Creek oil field, Wyo., (Melting point 127°F)	3	5	4	3
Waxy paraffin from oil-well casing Garber oil field, Okla. (Melting point 179°F)	12	12	11	9

*A solubility of 12 per cent means that 12 pounds of the paraffin will dissolve in 100 pounds of the solvent.

Table II

Relative Solubilities of Different "Paraffins" in Different Solvents at 122°F.

(Solubilities expressed in Percentages by weight)*

	BENZOL (90% grade) Spec. Grav. 0.880 at 60°F	GASOLINE (Motor grade) Spec. Grav. 0.753 at 60°F.	NAPTHA (Com. grade Spec. Grav. 0.759 at 60°F.	KEROSENE (Water Spec. Grav. 0.800 at 60°F. white
Commercial paraffin (Melting point 123°F)	1044**	1016**	780**	330**
Soft paraffin from oil-well tubing, Salt Creek oil field, Wyo., (Melting point 127°F)	70	58	73	43.3
Waxy paraffin from oil-well casing, Garber oil field, Okla. (Melting point 179°F)	8	10	12	4.6

*Same as in Table I
**At this concentration, lowering the temperature a fraction of a degree caused paraffin in the solution to solidify.

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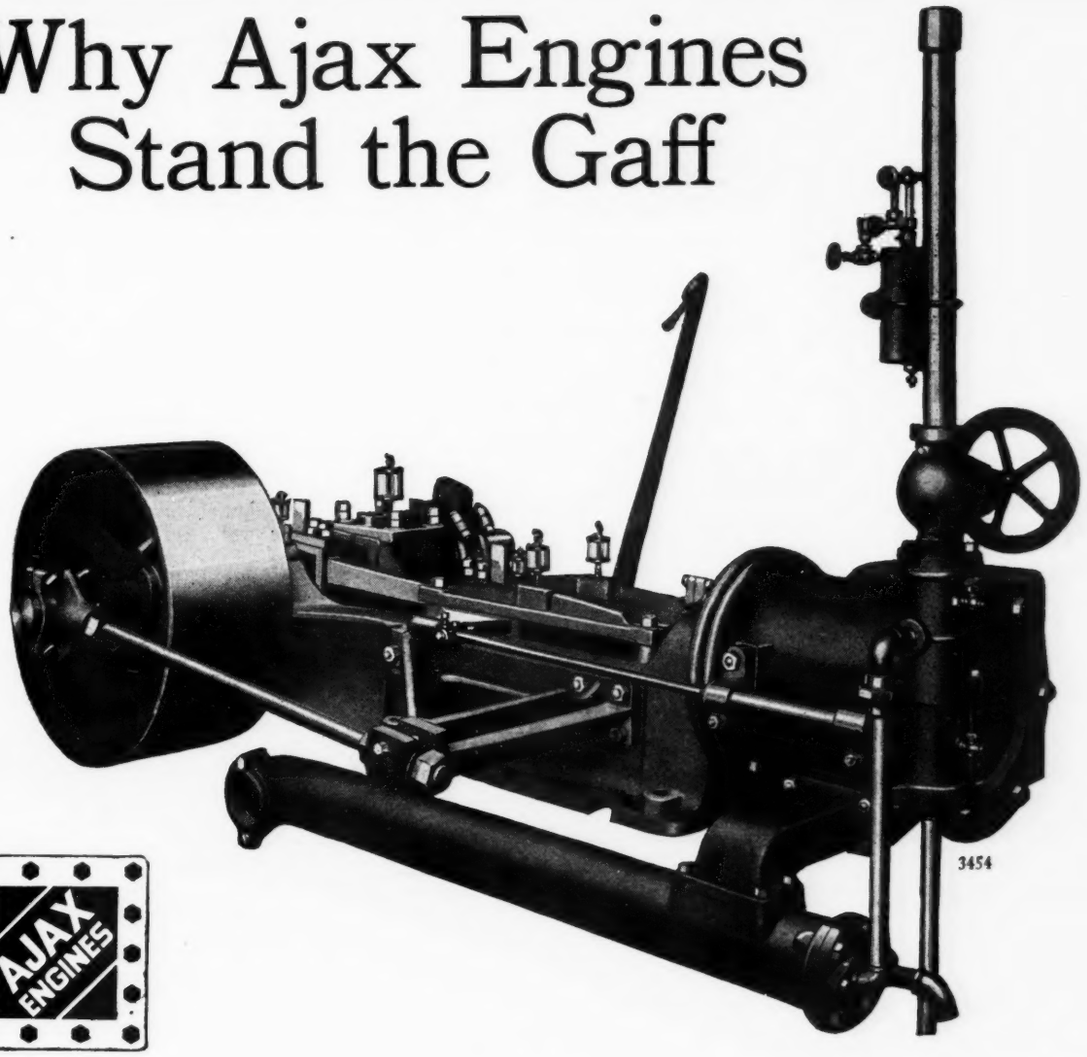

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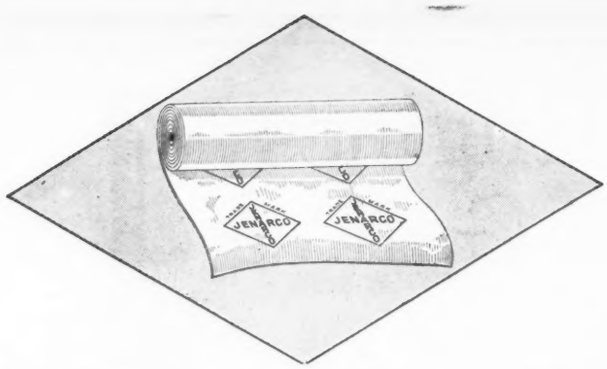

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productive sands in the wells and in the pores of the productive sands immediately around the wells tends to obstruct the flow of oil and gas into the wells. This damage is most common and at the same time most serious in old pumping fields where the gas pressure has been depleted and the oil has been subjected to long continued evaporation by escaping gas. The plugging effects generally become progressively worse until, in extreme cases, the flow of oil into the wells is practically shut off long before the recoverable oil is exhausted.

Casing, tubing, sucker rods, valves, and working barrels also become so badly fouled with paraffin as to interfere with pumping. In some fields, flowing wells, especially those flowing through tubing, become choked with paraffin deposited in the tubing and casing, or even in the flow lines that conduct the oil from the wells to the field tanks. The deposition of paraffin in a flowing well is generally the worst in the upper part of the well where the pressure is comparatively low and the oil has suffered the full chilling effect of the expanding gas. As the flow of oil and gas is choked off, the paraffin tends to run together and pack, sometimes completely filling the tubing or casing for several hundred feet. Losses in production followed by expensive pulling and cleaning jobs are the usual accompaniment of "paraffining." In extreme cases, especially where improper cleaning methods are used, the productive sands around the wells may become plugged to distances of several feet away from the wells, thus damaging those wells beyond repair.

Hard inorganic salts, commonly termed "gyp," composed principally of carbonates and sulphates of calcium, magnesium, barium, and strontium, as well as common salt, frequently encrust the pumping equipment and walls of the wells or accumulate in the pores of the productive sands around the wells. Waters leaking into oil and gas wells frequently deposit enough inorganic salts to plug the pores of the productive sands for considerable distances from the wells. Inorganic deposits in the wells may or may not be accompanied by paraffin. The damage they cause and more especially the plugging of pores of the productive sands, is often erroneously attributed to paraffining.

Determining the Cause of Trouble

Before applying methods for stopping or remedying paraffining and related troubles, it is desirable to determine the nature and causes of the trouble. So-called paraffin or mineral salt will be recognized at once when one or the other is removed from a well, but the different kinds of mineral salts plugging the pores of the sands, and also the mixtures of paraffin, oil and water, with different kinds of silt, are not so easily recognized. Possible methods of cleaning such deposits from wells and methods of preventing further deposition depend largely upon the composition and mode of formation of the deposits. A chemical examination of the paraffin should indicate

the chilling effect of expanding gas and it is believed that the solvent action of the oil helps to keep the face of the sand clean.

Should the well make water, it can be tubed with the working barrel a short distance above the top of the sand and the perforation set near the bottom of the hole with a flood nipple immediately under the working barrel. This enables the operator to pump down the water which collects each day and prevents him from pumping the well below the flood nipple. By this method the sand will always remain covered.

Regulation of Back Pressure. By maintaining as high back pressure on the wells as is possible without interfering with the recovery of oil, it should be possible to diminish the chilling by diminishing the expansion of gas in the wells. At the same time the paraffin would be more soluble on account of the higher pressure. The back pressure in pumping wells might best be held by tubing the well high and thus maintaining a column of oil in the hole rather than by pumping the well down and holding the back pressure entirely by a closed casing head. By keeping a column of oil in the hole the operator gains the two advantages acid, whereas insoluble sulphates fail to effervesce in acid. Some of the so-called paraffin deposits in southeastern Ohio contain such large proportions of silty carbonates that they effervesce and melt away in hydrochloric acid, yielding clean oil after the foreign matter has gone into solution. Most of the so-called paraffin troubles in oil wells are caused by the decomposition of hydrocarbons comparatively free from water and silt, but the fact is emphasized that some of these paraffin troubles are, in part at least, water troubles that must be met on that basis.

Methods of Preventing Paraffining

Regulation of Fluid Level. Recognizing the causes and effects of paraffining outlined in the preceding pages, the following methods have been used or suggested in order to eliminate the causes and to prevent or overcome their damaging effects. Probably the most common method of preventing or retarding the paraffining of a sand in a pumping well is to tube the well high enough for the sand to always remain covered with oil. This prevents to some extent whether or not it is an emulsion of paraffin and oil with water and silt. The composition of the silt and its probable mode of formation can also be determined by chemical study. If the paraffin proves to be an emulsion, the exclusion of the water from the well is one of the problems confronting the operator.

Calcite or other mineral salts plugging the pores of the oil sand generally appear as chalk-white patches betweeen the sand grains. This trouble should be suspected if mineral crusts are found coating the equipment and walls of the well. To detect calcite or other carbonates, drop a piece of the crust or plugged up oil sand in hydrochloric acid. Calcite or other carbonates will effervesce in the

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WE KNOW a man, seventy-five years old on the fourteenth of this December, who works hard every day and plans enthusiastically for the future. Anticipation is an extraordinary thing. After three quarters of a century of hardship and misfortune this man is still young, because he looks not back with regret but ahead with eagerness.

And it strikes us that this man typifies the spirit of the Petroleum Industry. The Oil Man is about to turn another page. 1924 is to be without parallel in the annals of the Industry, and already the hardships of 1923 are forgotten.

We are grateful that the Oil Man is made of stern stuff. We are glad that our own barometer of business responds always to conditions in the industry he has made.

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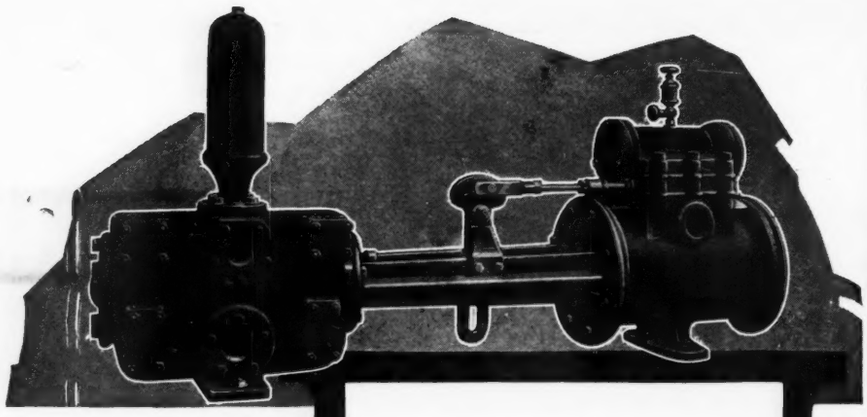

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of maintaining back pressure and keeping the sand covered. The problem is different in flowing wells where the productive sands remain covered by oil most of the time, the chilling and drying effects of the expanding gas at the bottom of the well being thereby diminished and the gas pressure being sufficient to help dissolve or blow off the paraffin that might otherwise plug the sand. Paraffin troubles with flowing wells generally result from the plugging of the upper parts of the tubing and casing, as well as the flow lines.

Paraffin that plugged the two-inch tubing in a flowing well in the Salt Creek oil field, Wyoming, in one to two weeks was overcome by closing in the well for 24 hours, thus raising the pressure to 450 pounds per sq. in. and then allowing the well to flow wide open through the tubing for the next 24 hours, and repeating these changes every 24 hours. So long as this cycle was repeated the tubing remained practically free of paraffin. The Bureau of Mines is conducting an investigation of the effects of regulated back pressure upon oil production.

Use of Heaters. Another possible method to prevent or diminish paraffining is to heat the interior of the well while it is in operation. This should afford the advantages of continually washing the face of the sand with the inflowing fluid while at the same time maintaining a temperature high enough to prevent the deposition of paraffin while it is being pumped from the well along with the oil. Steam and electric heaters may be developed for this purpose. Several companies have experimented with electrical heaters, but numerous mechanical and electrical difficulties have interfered with the success of this method. Up to the present time electrical oil well heaters have not come into general use, although favorable progress and some successful results are reported by companies engaged in developing and testing this type of heater.

Steam introduced between 2-inch tubing which is run inside of 3-inch tubing, as described elsewhere in this report, might prevent paraffining, but the method is costly both in equipment and operation. It should work best in shallow wells, because in deep wells the excessive condensation of steam is a serious drawback. The practical value of the method should be determined by adequate trials, preferably in shallow fields.

(Note: This article concluded in our next issue)

HOUSTON, Dec. 21.—S. Neinura vice-president of the Kishi Development Co. and of the Orange Petroleum Co., operating in the Orange, Tex., field, has returned from Japan. He made the trip following the earthquake in that country to learn the fate of his family. He found they had escaped injuries.

LOS ANGELES, Dec. 21.—David F. Connolly, well known Mid-Continent oil man, is here from New York, enjoying a vacation with Mrs. Connolly and their daughter. They are guests at the Hotel Alexandria.

Tampico District Petroleum Exports Gain In November

By Special Correspondent

TAMPICO, Dec. 20.—Exports of petroleum and its products from Mexico in November totaled 11,984,235 barrels as compared with 11,529,211 barrels in October, customs figures now available show.

These figures include distillates and fuel residue from California crude refined at Tampico plants. the exact figures on which are not available. For this reason Tampico district exports do not reflect Mexican production in as exact a sense as formerly.

Comparative figures by companies follow:

Exports From The Tampico District

Company	October	November
Transcontinental Petroleum Co., (Standard of New Jersey)	1,736,688	2,301,835
Huasteca Petroleum Co., (E. L. Doheny Interests)	2,624,171	2,408,757
Mexican Eagle Oil Co., (El Aguila)	1,529,373	1,003,861
International Petroleum Co., (John Hayes Hammond)	496,783	135,202
Cia. Mexicana-Holandesa "La Corona"	1,630,151	1,702,456
Cias. del Agwi, S. A.	144,748	157,280
Mexican Gulf Oil Co.	551,435	659,559
The Texas Co. of Mexico	534,609	800,104
Sinclair Mexican Co.	1,111,151	1,446,985
Island Oil & Transport Co.	64,884	.....
East Coast Oil Co. of Mexico, (Southern Pacific)	387,584	485,611
New England Fuel Co., (Magnolia Petroleum Co.)	358,309	274,675
U. S. Mex. Oil Corp.	28,644	27,784
Pierce Oil Corp.	.....	86,990
Interocean Petroleum Co.	.....	62,651
Chaddick & Co.	142,955	135,880
Panuco-Boston Oil Co.	.....	65,919
Cia de Gas y Combustible Imperio, S. A.	.....	.....
Empire Gas & Fuel Co.	187,726	228,686
Totals	11,529,211	11,984,235

California And Foreign Oil Receipts At Ports

NEW YORK, Dec. 21.—Receipts of California oil (crude and refined oils) at Atlantic and Gulf Coast ports for the week ended Dec. 15 totaled 1,846,000 barrels, a daily average of 263,714 barrels, against 1,142,000 barrels, a daily average of 163,143 barrels for the week ended Dec. 8, the American Petroleum Institute says:

California Oil Receipts at Atlantic and Gulf Coast Ports

(Barrels of 42 gallons)

	Week Ended Dec. 15	Week Ended Dec. 8
At Atlantic Coast Ports		
Baltimore	381,000	.....
Boston	72,000	67,000
New York	751,000	672,000
Philadelphia	402,000	80,000
Others	.....	78,000
Total	1,606,000	897,000
Daily average	229,428	128,143
At Gulf Coast Ports		
New Orleans and Baton Rouge	240,000	245,000
Daily average	34,286	35,000
Total Atlantic and Gulf Coast Ports	1,846,000	1,142,000
Daily average	263,714	163,143

According to figures collected by the American Petroleum Institute, imports of petroleum (crude and refined oils) at the principal ports for the week ended Dec. 15 totaled 1,601,000 barrels, a daily average of 228,714 barrels, compared with 2,787,000 barrels, a daily average of 398,143 barrels for the week ended Dec. 8.

Imports of Petroleum At U. S. Ports

(Barrels of 42 gallons)

	Week Ended Dec. 15	Week Ended Dec. 8
At Atlantic Coast Ports		
Baltimore	149,000	103,000
Boston	125,000	210,000
New York	120,000	520,000
Philadelphia	160,000	57,000
Others	218,000	(a) 396,000
Total	772,000	1,286,000
Daily average	110,285	183,714
At Gulf Coast Ports		
Galveston district	276,000	516,000
New Orleans and Baton Rouge	403,000	(a) 620,000
Port Arthur and Sabine district	130,000	305,000
Tampa	20,000	60,000
Total	829,000	1,501,000
Daily average	118,429	214,429
At All U. S. Ports		
Total	1,601,000	2,787,000
Daily average	228,714	398,143

(a) Revised

NOTE:—Figures are presented for the week ended Saturday morning so as to conform with period covered by the Institute report of estimates of daily average gross production. Figures are subject to revision each week. They are complete for all the principal ports where foreign mineral oil is imported.

OKMULGEE, Dec. 20.—Louis Roark, geologist for the Kingwood Oil Co., of this city, is in Colorado, working in the vicinity of the Ft. Collins well.

The Chesapeake Oil & Gas Co., of Huntington, W. Va., has been dissolved.

Gulf Coastal, Texas Completions, Week Ended December 22, 1923

Company	Lease—Well	Field	Depth	Prod
The Sun Oil Co	Robertson 2	West Columbia	3050	Aband.
J. R. Copeland	Spillman Island 1	Goose Creek	4676	Aband.
Wilson & Broach	McFadden 3	Spindle Top	860	15

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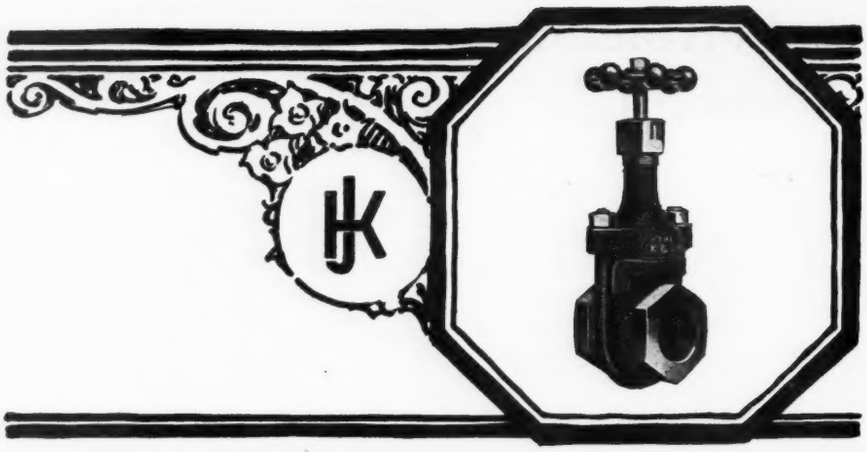

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Shipments Of Oil From California Ports

LOS ANGELES, Dec. 21.—During the week ending Dec. 15 southern California shipped from this harbor to the world's markets 1,526,000 barrels of petroleum products.

The supply was taken out in 21 tanker loads. Twelve tankers departed for Atlantic seaboard points, seven went to Pacific coast ports, one went to New Orleans and one to Tampico. The shipments were as follows:

Dec. 8

None.

Dec. 9

Los Angeles for San Francisco, 58,000 barrels crude for Union Oil.

Dec. 10

La Purissima for San Francisco, 45,000 barrels crude for Union Oil.

E. E. Bedford, New York, 100,000 barrels crude for Standard Oil.

Tuxpanoil for New York, 68,000 barrels crude for McAllister Bros.

Dec. 11

Miller County for New York, 68,000 barrels crude for Sun Oil Co.

San Gaspar for Tampico, 113,000 barrels crude for Shell Co.

Swift Eagle for Fall River, 74,000 barrels crude for Swift Sure Oil Co.

Montebello for Martinez, 60,000 barrels crude for Union Oil

S. M. Spalding for New Orleans, 75,000 barrels crude for Pan American Petrolem Co.

Dec. 12

Trimountain for Seattle, 60,000 barrels crude for General Petroleum.

Algonquin for New York, 59,000 barrels crude for Standard Oil.

La Purissima for Port San Luis, 45,000 barrels crude for Union Oil.

Dillwyn for Fall River, 85,000 barrels crude for Standard Oil.

F. H. Hillman for Providence, 90,000 barrels crude for Standard Oil.

Dec. 13

J. A. Moffatt for San Francisco, 62,000 barrels crude for Standard Oil.

Agwimex for Baltimore, 85,000 barrels crude for Associated Oil Co.

J. A. Moffat Jr. for New York, 100,000 barrels crude for Standard Oil.

Dec. 14

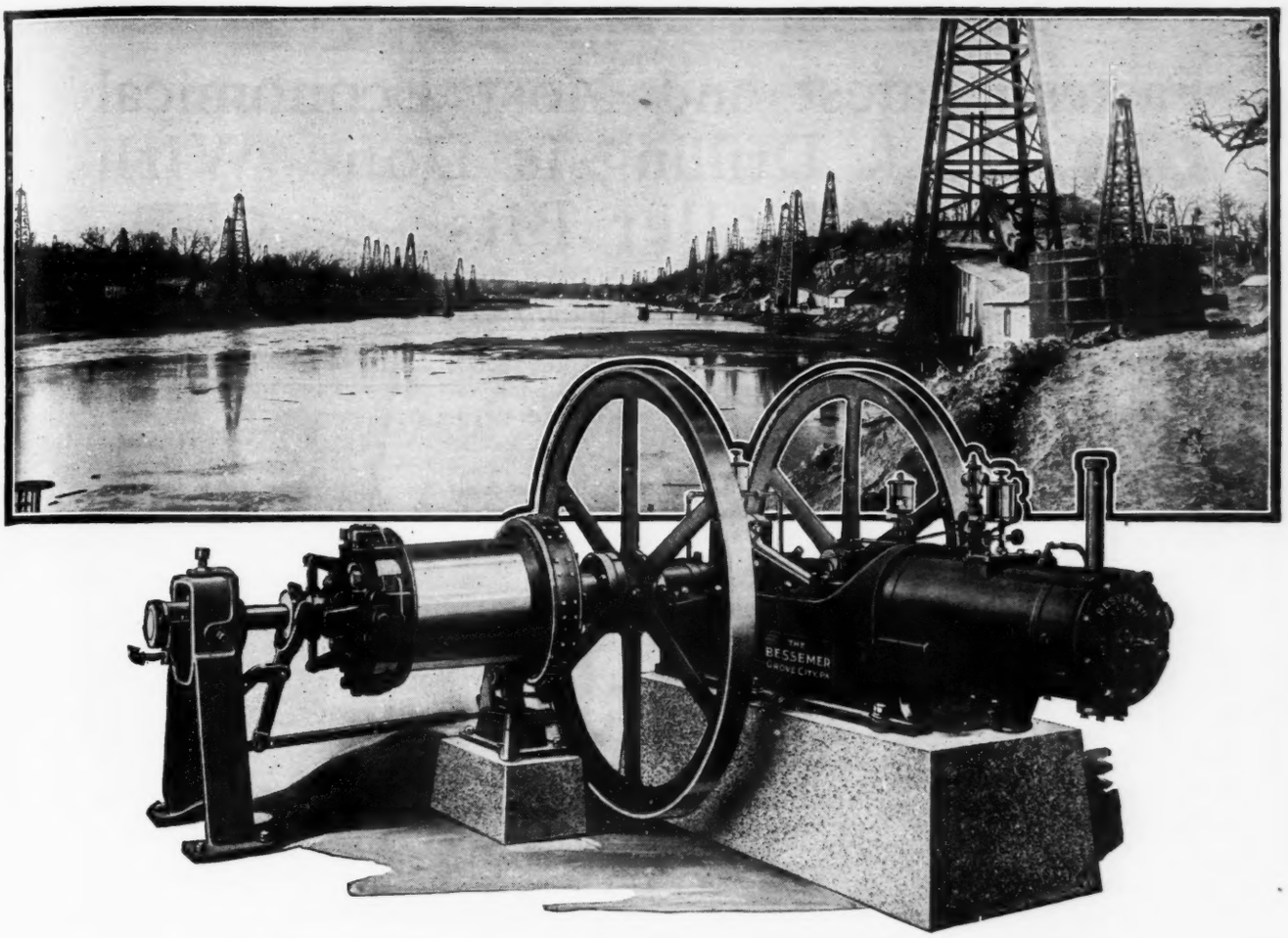
H. H. Rogers for New York, 85,000 barrels crude for Standard Oil.

Los Angeles for Martinez, 58,000 barrels crude for Union Oil.

Livingstone Roe for Bayonne, 76,000 barrels crude for Standard Oil.

Walter Jennings for New York, 60,000 barrels crude for Standard Oil.

ARDMORE, Dec. 21.—Ralph A. Birk, resident geologist for the Amerada Petroleum Corp., is spending the Christmas holidays with relatives and friends in Wichita Falls, Tex.



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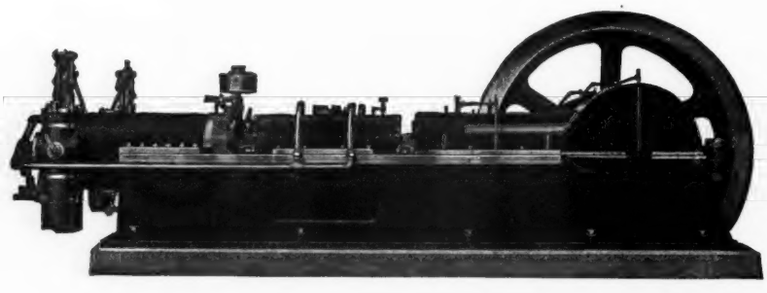

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Use Of Electricity In The Oil Fields

By W. G. Taylor
Industrial Engineering Dep't., General Electric Co.

Delivered At American Petroleum Institute Meeting

TO AN engineer who has observed changes in operating conditions and practice in the oil fields, particularly in recent years, it is gratifying to see the decided tendency toward improvement in efficiency of apparatus and in economy of operation. This is particularly noticeable among the larger companies, but many of the smaller ones are not slow in taking advantage of such improvements. Electric power is playing a large part of this, both directly and indirectly, and on every side the evidence of its superiority is strong and convincing.

In the oil fields having it available, electric power is used extensively to drive water pumps, gathering and line pumps, vacuum pumps, compressors for natural gasoline plants and circulating pumps in these plants. No less important are electric dehydrators, arc welding equipments for pipe line and tank construction, motor drive for machine shops, and general lighting about the fields. The greatest as well as the most important use of electric power, however, is in drilling the wells and in maintaining them as producers by pumping, pulling and cleaning them.

Drilling Equipments

Although much has been written and published about oil well motors, it may be explained somewhat briefly that different motors are used for drilling than for pumping. The larger motor used for drilling would not be nearly so economical in power consumption on pumping if it were used in place of the motor designed particularly for that work.

The drilling motor, usually 75 horse power in capacity, is used for either cable-tool or rotary work, and is supplied with control apparatus which not only gives the fine speed adjustment necessary in cable-tool drilling, but also gives the right motion of the tools required for drilling.

As the ability of electric drive to do this successfully is usually questioned by field men upon their first consideration of the adoption of motors, it is interesting to note the statement of an old steam driller in Kansas who used electric power for the first time in drilling wells for the Empire Gas & Fuel Co. He said: "It was possible to control the drop of the tools to such an exact degree, that if a driller were brought into the rig blindfolded and asked what power was used, he would say, 'Steam,' for the kick on the line is identical." It may be added that that company abandoned steam drilling in the Eldorado, Kansas, field several years ago.

The control apparatus for a drilling motor also gives all the speed control needed at light loads to handle such work as spudding-in, fishing and tonging pipe, and in general closely duplicates or improves upon the results obtainable with steam. Two rope wheels on the headache-post at the derrick give the driller complete control of the motor.

The same drilling motor equipment used for cabletools is suitable without change for the main drive on a rotary rig, the only difference in the set-up being that the motor instead of being belted through a counter-shaft to the bandwheel, is coupled to a gear reduction unit which drives the draw-works by standard and rotary chain. Separate motors are provided for the slush pumps. It has until recently been the practice to use one motor for the two pumps, shifting one to the other as required, but the better plan now being adopted is to provide a separate motor for each pump, thus making them entirely independent of each other.

Motor for Gassy Fields

There are comparatively few locations where the danger of ignition of gas around the rig is sufficient to warrant special protection on the electrical equipment. Thousands of installations of motor equipments without such protection have been operating successfully for years, but there are unquestionably many wells on leases not yet electrified where protection is advisable on account of the particularly bad gas conditions. To provide such protection, the controller and switches are immersed in oil and the slip-rings of the motor suitably enclosed. The entire motor has been enclosed in some instances, a number of such outfits having built for the Baku field in Russia.

It will no doubt be of interest to many that it is not feasible to build the motor frames or the enclosure for the rings gas-tight, but the construction is designed to withstand any explosion of gas inside and to cool of the gases developed by the explosion, as they seep out, so they will be below the ignition temperature of the gas outside. This is accomplished by using wide and heavy flanges on all joints and making them an ordinary machined fit. This type of construction has been determined as the best for the purpose, not only by the Germans and the English, but also by the United States Bureau of Mines in thier experimental laboratory at Pittsburgh, as the result of many tests of various types.

Cost of Drilling by Electric Power

In comparing the costs of drilling by various forms of power, it is necessary to eliminate all items not influenced by the power used, in order to avoid introducing factors which vary widely with the underground conditions and with the luck encountered. A comparison of this kind was recently made by the Pinal Dome Corp., operating in California and Texas. Three wells were considered, one drilled by electric power to a depth of 5108 feet, another by gasoline engine to a depth of 5208 feet, and the third by steam engine to a depth of 3955 feet. The loss of time due to shut-downs of the motor was 121 hours, gasoline engine 202 hours, and steam engine, including boiler, 328 hours. This indicates a material advantage of motor operation. The average cost of power per foot drilled was 82.1 cents for electric power, 85.5 cents for gasoline, and $2.49 for steam. This comparison is not a proper one, however, as the amount of power required per foot drilled will vary with the formations encountered, and so is not as true an indication of relative cost as the average cost of power per operating hour. This was as follows:

Motor	40.7c per hour
Gasoline engine	8.3c per hour.
Steam engine	93.8c per hour.

These figures speak for themselves and are further substantiated by records of other companies. The Empire gas & Fuel Co., for example, compared the cost of electric power for drilling a 2440-foot well in Kansas with the average cost of steam drilling on similar wells, and determined the total saving in cost of power to be $1,585 which amounted to $46.62 per day of actual drilling.

Rotary drilling by electric power in California is proving very economical, and some figures obtained on two different wells are good examples. The Nevada Ventura Oil Syndicate in the Signal Hill field at Long Beach operated an electrically driven rotary rig for 31 days in January, 1922, with a 75 horse power motor on the draw-works and rotary table, a 50 horse power motor on the slush pumps, a ½ horse power motor on the blower, 5 kilo-watts in lights and three electric ranges on the lease. The power bill was $501, an average of $16.16 per day. A steam driven rig, operating across the road from this well and burning oil under the boiler, averaged $92.00 per day for oil fuel and boiler feed water during the same month. Both rigs ran throughout the month without delays and made about the same amount of hole per day.

The San Martinez Oil Co. drilled a well to the producing sand in 38 days using an electrically driven rotary rig. A nearby well of another company was started on the same day and drilled by steam power, and the crews of the two rigs had a race with each other. Both wells had the casing set at the top of

the sand the same day, 38 days after starting, both were cemented at the same time and both reached production at the same date. The race was particularly interesting because, at the outset, the electrically drilled well got behind, the crew drilling with steam making hole faster at the start. Toward the end, as the crew on the electric rig became more proficient, they gained rapidly on the steam rig and completed the well on the same day at approximately the same depth. During the entire performance there was not a single accident of consequence on the San Martinez well, but on the steam drilled well there were a number of twistoffs and expensive accidents. The power cost on the electrically drilled well averaged $15.81 per day, while the steam rig cost about $100 per day for power.

The cost including installation of the electric and steam equipment at the two wells was practically the same, but the salvage value of the electric equipment at the completion of the well was estimated at about 90 per cent of first cost, while the steam equipment was worth considerably less.

Operation of Producing Wells

Let us now consider the operation of producing wells. It is only by having the lowest cost of operation and by being the most reliable and convenient medium that any form of power can lay claim to superiority for this work. It has become quite generally recognized that steam power is far from the best in these respects, and the question has thus narrowed down to a consideration of the gas engine and the electric motor.

A true comparison involves many factors, the value of which can best be determined by the actual experience of operating companies. Fortunately for the producer who wishes to know the facts, the use of oil well pumping motors has grown to such an extent in this country that practically complete operating data for a great variety of conditions are readily available.

Gas Engine vs. Motor

The mere fact that gas is available on a lease does not make the gas engine the logical or the most successful type of power equipment for pumping the wells. The cost of operation is usually the determining factor, reinforced by whatever addition advantages the equipment under consideration may have.

Some of these additional matters for thought are safety, reliability, convenience, and speed regulation.

Safety

That safety is necessary need not be dwelt upon, and mention has already been made of the use of electric equipment at gassy wells. The claim that has been made, that electric equipment has caused many serious and costly explosions, is unsupported by the records. If this claim were true, the thousands of motors which have been installed and the scores going in today would never have been purchased by the oil companies. No company would risk the large investment at every well for the difference of a comparatively few dollars in first cost and operating cost of the power equipment.

Another fallacy is the danger from crossed wires. The standard modern methods of insulation and wiring used give full protection from any such possibility, and only ignorance of these facts would lead one to believe otherwise.

On the other hand, the gas engine is not free from danger. Fires due to the clutch are known to have occurred, while men have been seriously injured and even killed by getting tangled up in the flywheel in the endeavor to start it. The Empire Gas & Fuel Co. has found that fully a third of its accidents to employes was due to this cause alone.

Reliability

Reliability in service is measured by the time lost due to interruptions rather than by the number of interruptions occurring. Any oil operator can check the service given by the power com- in this respect and will find that it is a rare case for the power to be off every three or four days as has been claimed. It is not unusual for the power to be on continuously for five or six months at a time. There may of course be frequent interruptions during a storm, but the power supply is not affected by cold weather, which as is well known, seriously impairs the gas supply and causes delays from freezing of water lines. The Empire Gas & Fuel Co. found that from 4½ to 8 per cent of the available pumping time was lost because of gas engine troubles, while with electric drive the loss was only from less than one per cent to about two per cent. Combining this with similar data obtained from several California operators, the average is about seven per cent for gas engines and three per cent for motors. Allowing for the accumulation of a head on the well which results in greater production for a time after a shut-down,

Powerine Calls Oil Service Building Lubservatory

DENVER, Dec. 13.—A lubservatory, as the oiling pits of the Denver Powerine Co. are called, is an added feature at the new service station of the company. The pits, numbering five, are 15 feet long, having a runway two feet wide at the end next to the wall for attendants.

The building on the left opposite the lubservatory is a garage which the company expects to remove at some future time to permit an extension of the lubservatory and an addition of eight more pits. The service station and the lubservatory cover most of six lots of 25 by 125 feet each.

The station has four gasoline pumps, three of which are installed in a line between the posts of the canopy (one was out the day the picture was taken). The fourth is on an island in front. Another pump is to be placed on an island and the two covered with a pergola, Fred C. Cramer, president of the company, says.

The company's office is in the building to the right. This structure conforms in style to the other buildings. It is 48 by 50 feet.

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the lost production on a 40-barrel well averages about 42-barrels per month with gas engine drive and 18 barrels per month with motor drive. The difference is no small item.

Convenience

Considering convenience, it has yet to be demonstrated that a gas engine is more flexible in control than an oil well motor, or that pulling and cleaning the well can be done more quickly with it. Every operator who has used electric power will testify to the fact that with a motor, time is gained by the ability to "spot" stands of rods and tubing more quickly. On heavy loads the motor holds up its speed as well or better than the engine. The engine is controlled by a throttle wheel and a clutch lever, while a single wheel gives complete control of a motor.

Speed Regulation

Speed regulations of the engine or motor affects the amount of production and of rod breakage. The amount of production varies with the number of strokes per minute, and consequently with the speed of the engine or motor. The latter is affected by changes in load and by variations in the power supply. As compared with the irregularity of the usual oily field gas supply due to changes in the underground conditions as well as in the weather, electric power is notably free from such disturbances, resulting nearly always in a high average motor speed and thus in more production. No pumper can be expected to check the speed on every well as often as would be necessary to compensate for the changes which occur in the average engine speed.

Many records can be produced to prove that rod trouble is less with motors than with engines. It is not the range in speed but its rate of change on every pumping stroke that does the harm. An average engine, selected at random in Southern California, operated normally at eight explosions per minute. The governor operated at 110 r.p.m and the resulting explosion literally picked speed up to 150 r.p.m. in a very small fraction of the total time of 7½ seconds between explosions. Occasionally some irregularity developed, the speed would drop to 100 r.p.m. and the two explosions then following would run the speed up to 160. This rapid acceleration due to the explosions is the source of much rod trouble which cannot be explained by the use of war material, as it was known even before the war began. On the other hand, the motor speed is inherently constant and varies smoothly and gradually up and down as the load changes on each stroke. The speed is only slightly affected by changes in voltage, while the frequency of the power supply, on which the motor speed depends, is always practically constant.

Comparative Pumping Costs

Further consideration of the gas engine and the electric motor for oil well

pumping resolves into the question of costs of operation.

For ready comparison, data on fixed and operating charges which are submitted herewith are based on a lease with twenty-five units. In preparing this tabulation, the data which has been used has been obtained from various oil operators who have kept records. It has been necessary to co-ordinate the results of several companies, as no one company had this data complete with all items segregated, but this in no way alters the value of the data.

First Cost per Unit—25 Units

30 h.p. engine installed ready to run	$2,400
30/15 h.p. motor installed ready to run, including transformers and primary lines	2,200

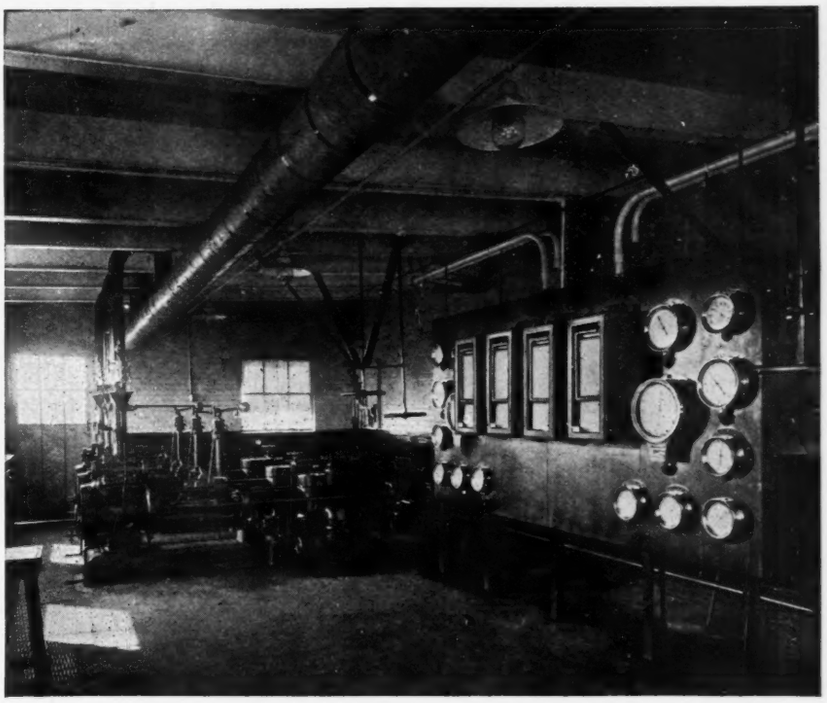
Annual Fixed Charges per Unit—25 Units

	Gas Engine	Motor
Interest on investment at 6%	$144	$132
Depreciation, engines 10% motors 5%	240	110
Maintenance, engines 5%, motors 2%	120	44
Belt maintenance, engines 20.5c, motors 10c per day	74.83	36.50
Insurance and taxes, 2%	48	44
Total fixed charges per unit per yr.	$626.83	$366.50

Annual Operating Costs per Unit—25 Units

	Gas Engine	Motor
Engine lubricating oil, 180 gal. @ 38c	$ 68.40	.....
Motor and Countershaft lubricating oil, waste and cleaning	.....	9.60
9 pumpers, 3 per shift @ $5.25 per day	689.85	.....
6 pumpers, 2 per shift @ $5.25 per day	.....	459.90
1 gas engine man @ $6.75 per day	97.20	.....
1 gas engine helper @ $5.50 per day	79.20	.....
1 electrician hired from electrical contractor at $10 per day, half time required	.....	72.00
Power, 6.76 kw. input for 24 hrs., 365 days, or 59,217 kw.-hrs. @ 1c	.....	592.17
Operating cost per unit per year	$ 934.65	$1,133.67
Fixed charges per unit per year	626.83	366.50
Total cost per unit per year	$1,561.48	$1,500.17

This comparison serves to show that under these conditions motors are more economical than gas engines, even without including any charge for gas or water for the engines, without taking account of the greater percentage of time lost from shut-downs of the engines and capitalizing the resulting loss in production, and without capitalizing the decreased number of pulling jobs due to reduction of rod trouble when motors are used. Furthermore, as will presently be shown, the power consumption assumed represents the heaviest set of pumping conditions encountered almost anywhere in the country, considering the wells as a group, and it would be much fairer to the motor to



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Yes, we'd like you to see our ledger. And we'd like to show you at the same time our ledgers for past years. You'd be surprised to see the large number of names continuously on our books for the past 38 years.

The reasons for this big repeat business are:

1. Our products are made from the choicest Pennsylvania crude.
2. During all this time, quality has always been uppermost in our minds.
3. A policy of square dealing and fairness to all our customers.

Make it a point to write us about PENNSYLVANIA

Automobile Oils
Neutral Oils
Cylinder Stocks
White Crude Scale Wax
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Railroad Oils
Transformer Oils
Black Oil
Thread Cutting Oils
Kerosene
Gasoline
Greases (all grades)
Soap

CONTINENTAL Refining Company
Oil City, Pa.

use a lower figure representing more nearly average conditions.

We will now consider in detail the items making up this comparison of costs.

The cost of the gas engine installed and ready to run has been based on the

First Cost

figures given in the Summary of Operations, California Oil Fields October, 1922, Vol. 8, No. 4, Page 8, issued by the California State Mining Bureau. The cost of $2,514.75 given there has been reduced to $2,400 to allow for subsequent changes in prices. That this figure is reliable may be judged by the fact that it was obtained in an unbiased investigation made by the State Mining Bureau.

The cost of the motor installation is the average of many available records and covers the use of a belted countershaft rather than reduction gears, as this is the more usual type of installation. The figure includes setting the motor and countersaft on concrete piers, using an endless motor belt, lengthening the engine house for motor operation, and putting in the wiring in a first-class manner. The pro rata cost of transformers, metering station and power distribution lines is included, based on 500 ft. well spacing. Freight and haulage charges and cost of a counterweight on the walking-beam are included.

If the oil company did not supply its own transformers and primary lines, the first cost would be from $1,750 to $1,800 per motor but the power cost will be determined by a different schedule giving a higher power rate as will be explained later.

Depreciation

There is sometimes a difference of opinion as to the proper way to charge depreciation, and some companies arbitrarily depreciate all apparatus at the same fixed rate, but this is obviously incorrect. Considering the known useful life of the apparatus, the percentages used are certainly none too high.

Maintenance

It is a matter of common knowledge that a new gas engine will operate for the first 3 or 4 years with very little trouble, but after that repair expense increases rapidly. That a 5 per cent charge distributed over the life of the engine is conservative, is verified by the records of a large California oil company covering 75 gas engines over a 5-year period, and showing an average shop cost of labor and material for repairs of 50 cents per day. The Empire Gas & Fuel Co. in Kansas in a report published in 1922 gave this cost as $24.14 per engine per month, which was the average for 367 engines for 5 months.

It will be noted that the total combined depreciation and maintenance charge for the gas engine is 15 per cent as against 10 per cent claimed in the article already mentioned. We are yet to find the first operator who has kept records who will make such a conservative estimate.

In the report of the Empire Gas & Fuel Co. just mentioned, the maintenance charge against 241 electric motors was given as $4.64 per motor per month. This is sufficient justification for assuming a charge of 2 per cent for maintenance.

In this connection just a word or two may be said about the claim, to which exception is here taken, that electric control devices or equipment in general are more delicate or require the services of an expert to any greater extent than gas engine equipment. To be quite impartial, anyone qualified to judge must not overlook the troubles with the magneto on the engine and the necessity which sometimes occurs of calling for an expert to diagnose starting troubles.

Belt Maintenance

This is an important item not always considered. The average daily costs are taken from the records of a large California oil company and cover 34 motor and 75 gas engine installations over a period of five years, which makes them sufficiently conclusive.

Lubricating Oil and Waste

The cost of lubricating oil for the gas engine is given on the authority of the Western Machinery Co., of Los Angeles, as gas engine manufacturers. The cost of waste for the engine has not been included, although it is an item of expense.

The cost for the motor installation includes oil, waste and cleaning, as these items were not segregated in the records of the General Petroleum Corp. of California, from which they were taken. This is an actual cost for a large number of motors which that company has in service.

Labor and Attendance

For the gas engine, the figures are given on the authority of a gas engine manufacturer, and check closely with actual records. The charges indicate that the engines require considerable care, and contradict the claim that progress in gas engine construction has in recent years reduced operating costs. Further contradiction is found in the available records of the cost of necessary maintenance and supplies, such as lubricating oil and waste.

Records of operating companies do not show that as many pumpers are necessary for electric as for gas engine operation. While it is true that the pumper's duties include care of the rig as well as of the power equipment, he spends a larger part of his time on the engine than on the motor. Every oil company which has used both forms of power knows this. In a great many cases 25 motors would be taken care of by a single pumper, and in any case two men per tour would have a very easy time of it. As an extreme case, the Associated Oil Co. in the Kern River field in California, with 215 indi-

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Pioneers of the manufacture of High Grade Uniform Quality Western Cylinder Stocks known all over the world as

Bigheart Cylinder Stocks

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Barnsdall Refining Company

Successor to Bigheart Producing and Refining Co.

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65 TO 30,000 GALLONS HORIZONTAL & VERTICAL

SHARPSVILLE BOILER WORKS CO.
SHARPSVILLE, PENNA.

EASTERN SALES REPRESENTATIVES FOR McDONALD OIL EQUIPMENT

Taxman Offers a New Service

Deviating from a long established policy of selling only in tank cars, the Taxman Refining Company is now in position to offer the jobbing trade a complete line of lubricating oils in barrels, in l. c. l. or carload lots.

These oils will be the product of the largest independent refiner, but they will be marketed under a Taxman brand.

The same principles of "Service Without a Premium" that have governed our tank car sales will apply to your order for lubes in barrels.

Ample Chicago warehouse stocks will be carried to insure prompt shipments.

Your inquiries or orders by wire, phone, or mail will be given careful attention.

Taxman Refining Company

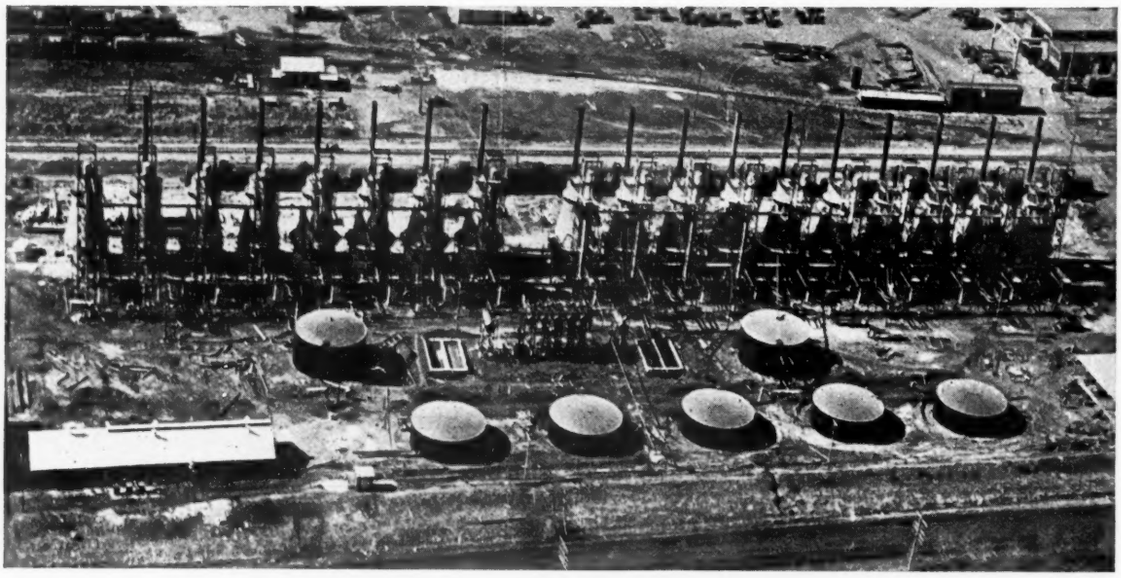
Sales Agents

New York Life Building, Kansas City.

116 S. Michigan Ave., Chicago.

From a Daily Production of 2900 Gal. of Gasoline in 1920 to a Daily Production of Nearly 200,000 Gal. of Gasoline in 1923

THIS IS THE RECORD OF
The FLEMING CRACKING PROCESS



A battery of 18 Units in operation

Mid-Continent representative:
PAUL GERHARD
307 KENNEDY BLDG., TULSA, OKLA.

The RICHARD FLEMING Co.

140 Cedar Street
New York City

vidual motor-driven wells, 30 jack plants and numerous auxiliary pumps, requires only three pumpers per tour. They are provided with Ford cars and the system has been in satisfactory operation for quite a while. Only motor operation makes this possible.

As regards labor for maintenance of the electrical equipments, let us consider briefly what several oil companies are doing.

(1) The Associated Oil Co., on the lease just mentioned, has one man for maintenance, assisted at times by four men who are mostly engaged on construction work.

(2) Arizona Oil Co., Kern River, field, California, 53 oil well motors and several miscellaneous motors. One electrician takes care of all work in good shape.

(3) Associated Oil Co., McKittrick field, California, 32 oil well motors and several miscellaneous ones. One electrician does all work, with time for house-wiring and for care of lease at Lost Hills, 40 miles away.

(4) C. J. Berry Oil Interests, Maricopa and McKittrick fields, California, 65 pumping motors and 3 drilling motors now installed and more coming in. One electrician and one helper.

(5) The Shell Co. of California, Santa Maria field, California. 75 pumping motors, 4 absorption plant motors, 4 water pumping stations motors and 2 drilling motors. One electrician and helper care for all and do electrical and telephone work on the lease.

These instances show that no one would be warranted in charging the full time of an electrician and helper against only 25 motors. An oil company with no more than this would probably, as many are now doing, engage an electrical contractor to do their maintenance work. It would take less than half of one man's time at an estimate rate of $10 per day, including the contractor's profit.

Power Consumption and Rates

It is assumed that gas for the engines can be obtained from the lease without cost. Often, however, the gas has a market value or must be purchased, in which case the cost must be charged against the engine.

Similarly no charge is made for circulating water, although in many cases it must be purchased or pumped at considerable expense. Thirty-six dollars per engine per year is a fair figure for many California fields. It costs the Empire Gas & Fuel Co. in Kansas an average of $108 per engine per year. For 10 engines at Maricopa, California it averages $42.48, and the General Petroleum Corp. some time ago found their average was $15.

There is no justification for assuming in a comparison of this kind that the electric power input to the motor of each well will average as high as 11.9 kw. or even 8.5 kw., as has been done in the article already referred to several times. Correct conclusions cannot be drawn unless such figures are based on actual field conditions rather than selected arbitrarily. Examinations of power companies' ledgers and of oil companies' monthly bills have been made and the following records obtained of actual input per well, in some cases including the power consumption of other pump motors which thus makes the average appear higher than the wells actualy require.

(1) Coalinga Field, California. Average input per well for 5 months for 11 oil companies with 23 motors on representative wells ..... 3.63 kw.

(2) Santa Maria, Casmalia and Cat Canyon fields, California. Average input per well for 5 months for 8 oil companies having 63 motors on representative wells ..... 6.76 kw.

(3) McKitterick field, California. The Berry and Keller Oil Co., 18 oil well motors and 2 shipping pump motors. Average input per well, including pumps..... 4.22 kw.

Associated Oil Co., 32 oil well motors. Average input per well 3.33 kw.

(4) Maricopa field, California. Berry Oil Interests, 40 oil well motors. Average input per well 3.25 kw.

Tannehill Oil Co., 10 oil well motors. Average input per well 3.33 kw.

(5) Elk Hills field, California. Standard Oil Co., 6 oil well motors. Input per well determined from instantaneous readings.. 8.15 kw.

These are particularly heavy wells and do not represent the average conditions in the field. The figures are not true averages but are given to show an extreme case of selected heavy wells.

(6) Kern River field, California. Associated Oil Co., 215 oil well motors. Average input per motor ..... 3.60 kw.

This includes a number of jack plants which can not be readily segregated.

(7) Eldorado and Augusta fields, Kansas. Average input per well for 2 months for about 25 oil companies having 81 average wells ..... 4.58 kw.

(8) Gulf Coast fields, Texas. From records of the Gulf Production Co., the Humble Oil & Refining Co., and others, the average input for the various fields where a large number of motors are installed is .....5.20 to 6.00 kw.

The power consumption records included all power used at the well not only for pumping, but also for pulling, bailing and cleaning, and include losses in transformers and lines owned by the consumer. The average is determined from the monthly kilowatt-hour consumption by assuming that the motors operated continuously. It will be appreciated that in selecting the high input of the Santa Maria, Casmalia and Cat Canyon fields as the basis for the comparison which has been made, the motor has been heavily penalized. A more nearly correct average input would be about 4.75 kw., judging from the figures given in the foregoing examples.

The power rate used is the substation rate of the San Joaquin Light and Power Corp. in California, this being applied to any consumer who supplies all his transformers and necessary lines. The power company meters the input at one or more locations. This rate is not determined by the amount of power used, and an oil company with only one well could obtain it if desired. If the transformers and lines are not furnished by the oil company, the rate is 40 per cent higher, but the cost of the installation is then reduced to $1,750 or $1,800, thus bringing down the fixed charges on the electric equipment.

The question as to which rate is best to use can be readily worked out by any company, and it is found that the lower rate becomes more economical if about $600 worth of power per month is used. This corresponds roughly to a minimum of 14 or 15 wells. The minimum number would be less where the pumping load is heavy.

Power rates as well as power consumption vary considerably in fields in different parts of the country and it can be readily appreciated that on this account as well as because of the varying cost of gas and water for gas engines, a separate comparison must be worked out for each particular set of conditions, to arrive at the true worth of electric power for oil well pumping operations under these conditions.

For a fair comparison of engines and motors it is unsafe and misleading to cite bad examples which are due to lack of proper care and attention or to poor management, as they do not represent the normal conditions which a stable oil company will strive to maintain for the purpose of obtaining the maximum return to its stockholders. Neglect and abuse of the equipment is just as fatal to the success of the gas engine as to that of the electric motor.

In the preparation of this paper much credit is due to the assistance rendered by Mr. C. F. Forsberg, of Bakersfield, California, who has supplied a great deal of data accumulated by painstaking effort over a period of several years.

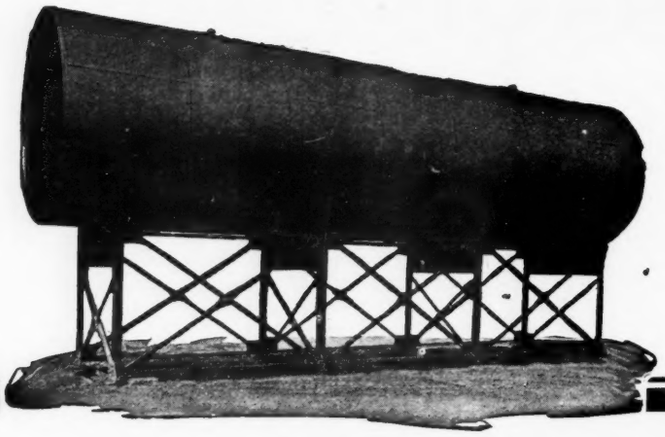
A.O.M.A. Issues Report Of Financial Status

CHICAGO, Dec. 20.—A financial statement recently issued by the American Oil Men's Association, whose headquarters recently have been established in the Otis Bldg., Chicago, shows the organization to be in a sound financial condition. In the nine months of its existence between Feb. 3 and Oct. 31, 1923, the association collected $21,301.76 and, disbursed $13,441.26 leaving $7,860.50 represented by the following assets—there being no liabilities:

Furniture and fixtures	$ 801.97
Accounts receivable	549.50
Doubtful accounts	693.00
Petty cash	145.95
Bank	5,670.08
Total	$7,860.50

For the information of those interested, the association listed the sources of its $21,301.76 collected, and divided the fund into six main classifications, as follows.

Refiners' dues	$4,429.46
Carload marketers' dues	2,100.00
Jobbers' dues	3,848.00
Supply men's dues	2,100.00
Contributions	3,550.00
Conventions	5,274.30



Standard Tanks—Once Installed—You Can Forget Them

Standard Super Tanks built throughout of open hearth steel plate with all joints securely riveted by hydraulic pressure are practically indestructible.

Heads are double braced and held in position by two angle irons running lengthwise of the tank. Double bulkheads between compartments prevent leakage from one compartment to the other. To absolutely insure "bottle tight" construction, each Standard Super Tank is filled with water and thoroughly tested before shipment.

In this way, through the use of only the highest quality tank steel, the most careful methods of manufacture and a most rigid, final inspection—the long trouble-free service of Standard Super Tanks is made possible.

Standard Tanks are available in single, double or triple compartments, any size and for any purpose. Steel Super Supports shipped with each tank if desired. Write us your requirements. We will quote prices and delivery dates by return mail.

The Standard Boiler & Plate Iron Company

Niles STANDARD TANKS **Ohio**

For Fuel Oil Delivery

FARRELL is selling an increasing number of truck tanks to distributors for fuel oil delivery.

These tanks, furnished with or without bucket box as the buyer desires, are built only as Farrell builds them—to stand the gaff of constant service; to outlast the chassis on which they are mounted.

The popular size is 1000-gallon capacity, but your own requirements can be met from 250-350 capacities for fast service to 2400-gallon capacity for industrial and large tank filling.

Your inquiries or orders will be handled promptly, and shipments will be made when promised.

Farrell Manufacturing Co.

Builders of Truck Tanks in all sizes and Underground and Surface Tanks or welded or riveted and welded construction up to 10,000 gallons.

SALES DEPARTMENT

549 Washington Boulevard
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WORKS: 1400 Cass St., Joliet, Ill.

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PREMIUM MOTOR AND TRACTOR OILS
CANFIELD ZERO TEST MOTOR OILS
CANFIELD CASTOR MACHINERY OILS
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CANFIELD ZERO TEST GEAR COMPOUND
CANFIELD CUP GREASE
CANFIELD AXLE GREASE
CANFIELD AUTO SOAP
CANFIELD ANTI-ROSIN BELT DRESSING
CANFIELD PETROLATUMS

Canfield Oil Co. Cleveland

Gas House Hank.

Judging By Sounds

SEE WHAT YA DONE! WELL BE LATE = IT'S ALL YOUR FAULT!
HOW COME? I DIDN'T TELL IT TO BLOW-OUT!
AND IF YOU THINK I'M GOING TO STAY HERE AN FREEZE YER WRONG = I'M GOING TO A SERVICE STATION = I'LL SEND THE MAN TO HELP YOU!
GO A-HEAD! DONT TALK SO MUCH
HOW AM I TO KNOW WHEN YOU AND MY HUSBAND HAVE THE CAR FIXED?
THAT AUGHTA BE SIMPLE
-NO- SMOKING
WHEN SHE RATTLES COME OUT!
HANK-EDMISTON -23-

On The Lazy Bench

Tobacco

By a Sailor Poet

Tobacco is a filthy weed;
I like it.
They say it fills no normal need;
I like it.
It makes you old,
It makes you lean.
It takes the hair
Right off your bean;
It's the worst damn stuff
I've ever seen.
But—I like it.

—*Perfect Star*

* * *

The Super-Sex

In the beginning man dropped a rib to make woman, the super-sex of civilization. In transcribing her notes, a recent "last word" from Business College dropped a comma which did much to undo the Divine Handiwork.

She heard: "Woman, without her, man would be a savage."

She wrote: "Woman without her man, would be a savage."

—The Look Box

* * *

Three Wise Men

Three dignified gentlemen conversed in the limousine while the colored chauffeur bought gasoline and oil and accepted air and water. One was a college professor, another an eminent architect and the third a famous efficiency expert.

"Gentlemen, please note the native ingenuity of the proprietor of this service station!" cried the professor. He has removed the spout from his water can so that he may pour from it without tipping it up so far!"

"Hardly that", replied the architect. "I am sure he has removed it so that there will be no danger of marring the threads of the radiator cap!"

"You are both wrong", smiled the efficiency expert. "The spout has been removed so that the can will fit in the sink under the faucet for refilling. I'll wager that this is the real explanation of the missing spout."

And so the argument started! After several minutes they called the proprietor himself, explained their theories and demanded to know which was right.

"Your're all wrong!" grinned the owner of the spoutless can. "That spout was kicked off by the hind end of a Lizzy yesterday!"

—The Ventura Mission

* * *

Customer: "I would like to see a pair of shoes that would fit my feet."
Salesman: "So would I."

Even Through Plain Cussedness

You Can't Break or Harm The Hose Arm of The S-G

ROMORT AIR and WATER STATION

Because the hose arm of the S-G may be pulled straight down from any direction without swiveling any part of the head structure. The most abusive treatment imaginable can't possibly harm it.

In the S-G whipping of the hose and tire valve past the post after being released is entirely eliminated by an automatic check that controls the return of the arm to normal position. But that is not all, there are several other equally important features of the S-G you should know about. Better write our sales department today for full details.

ROMORT VALVES and FITTINGS

Style "K" ROMORT
Automatic Air Valve

Romort Air Valves mean better air service to your trade and less frequent replacements for you. In other words they will lower the upkeep costs of your air service.

That's why they have the reputation of being "The Best That Money Can Buy".

Manufacturers
ROMORT MFG. CO.
Oakfield, Wis.

Sales Dept.
THE ZINKE COMPANY
1323 S. Michigan Ave.
Chicago, Ill.

ROMORT PRODUCTS

FURNACE FUEL

Approximate Tests

Color—Cherry red	Viscosity—23 at 70 F. Tag.
Flash—200 Fah.	About 85% over at 550 F.
Fire—230 Fah.	Gravity—38/40

Cold test—0/10 above

Let us have your inquiries—sample upon request

INDEPENDENT REFINING CO., Oil City, Pa.

Asks 6-Cent Difference On Heavy Oil Rate

By Special Correspondent

WASHINGTON, Dec. 17.—Uniform difference of 6 cents per 100 pounds in freight rates on refined products on the one hand, and crude, gas oil and other residuals on the other, has been formally recommended to the Interstate Commerce Commission by John H. Howell. He is the examiner who heard the testimony of witnesses for shippers and receivers of oil and of the railroads serving them in the territory covered by the railroads for which E. B. Boyd and F. A. Leland are tariff publishing agents.

That territory, so far as refinery points are concerned, lies between the Mississippi river on the east and the Rocky mountains on the west. As to territory of destinaton, directly or indirectly that covers the whole country.

Adoption of the recommendation will bring about increases on crude oil in all cases where the difference now is greater than six cents, and reductions where it is less. The difference could not be brought about by any increases in rates on refined oil. Mr. Howell said it was to be understood that his recommendation would not cover advances in the rates on refined oil.

When, in 1915, the rate body decided the big case known as Mid-Continent Oil Rates, it intended to establish a difference of five cents. It named rates to certain specified points. The railroads complied literally with its decision but, with few exceptions, declined to make the rates to other points on the differential basis. Three years later when freight rates began being advanced on a percentage basis the differential, in some instances became 6, in others, 6.5 and still others 7 cents. In cases where the five-cent difference was established between general percentage increases, it became only 5.5 cents, a rule for the disposition of fractions of a cent helping to complicate matters.

With a view to bringing about uniformity, the two railroad tariff agents asked the Commission to reopen a number of old cases, brought by consignees of oil in Iowa, Illinois and other states west of the Mississippi and modify the orders therein so as to permit of uniformity at six cents. The cases were opened up and Examiner Howell, after listening to the testimony, recommended modification of orders so as to bring this about.

Opposition to the uniformity, Mr. Howell said, was shown by those who would have to bear increases. He said they were not opposed to uniformity that would not increase their rates.

The Western Petroleum Refiners Association, according to the examiner's report, came in to oppose a definite relationship of the rates. Its position in the revived cases, he said differed from that taken in the original case, No. 11788, Davenport Commercial Club vs. Direc-

tor-General. In the revived case, Howell said, the association contended that fuel and gas oils were commodities differing from, and not competitors with or used for similiar purposes as, gasoline and kerosene; and that there should not be any established relationship between the two classes of oils.

The primary purpose of the case when first heard was to force the Director-General of Railroads to establish the differential as directed, but unfortunately for the shippers of oil, this was not ordered when the case was first decided. At the original hearing, Mr. Howell said, the association supported the complaining commercial club, contending that the proper differential, prior to August 25, 1920, would have been five cents and 35 per cent higher after that time. The association was represented in this hearing by James F. Lawrence and A. T. Sindel.

Mr. Howell said that, as to the rates considered in the earlier cases, the hearing on the revived case was merely supplemental and that the difference should be established at six cents.

He incorporated in his report a table showing, for illustration, what would happen to rates from the three Mid-Continent groups to Iowa and adjacent points in Illinois, together with comment preceding and following it, as follows:

"The changes proposed in the gas and fuel oil rates covered by the orders in cases Nos. 11788 and 12003 and also in the rates on refined and crude oils to the same points are shown in the following table, in which the present rates and the proposed increased or reduced rates are stated:

To—		From Group 1 Refined	Fuel and Gas	Crude	From Group 2 Refined	Fuel and Gas	Crude	From Group 3 Refined	Fuel and Gas	Crude
Burlington										
Moline										
Rock Island	Present	26.5	20.5	26	33	26.5	29.5*	33	26.5	29.5*
Davenport	Proposed			20.5		27	27		27	27
Muscatine										
Cedar Rapids	Present	26.5	20.5	26	33	26.5	33	34	28	33.5
	Proposed			20.5		27	27			28
Iowa City	Present	26.5	20.5	26	33	26.5	33	33	28	33
	Proposed			20.5		27	27		27	27
Ottumwa	Present	24	17.5	24	29.5	24	29.5*	33	26.5	29.5*
	Proposed		18	18	30		24	24	27	27
Mason City	Present	31.5	25.5	31.5	38	31.5	37	40	34	37
	Proposed			25.5		32	32			34
Fort Dodge	Present	29.5	24	26	36	29.5	33.5	38.5	32.5	33.5
	Proposed		23.5	23.5		30	30			32.5

*Reduced November 1, 1923, to 26.5 cents.

"From this table it will be seen that to the points named no reductions are proposed on refined oil and but two reductions on fuel or gas oil, namely, one-half cent to Fort Dodge from Group 1 and one cent to Iowa City from Group 3. On the other hand an increase of one-half cent on fuel and gas oil is proposed to each point named from one or more of the three groups and an increase of one-half cent is proposed on refined oil to Ottumwa from Group 2. The table is in error, however, in that the rate on fuel oil to Ottumwa from group 3 is 25 cents.

The current rates on fuel oil to Fairfield are the same as to St. Louis from Group 1 and one cent over St. Louis from Groups 2 and 3, namely 20.5 and 24 cents, respectively.

"The carriers, who have always contended that low-grade oils are entitled to no lower rates than refined oil, make no effort to show any advantage that would follow the establishment of a uniform differential of 6 cents. They merely state the changes proposed to establish that differential, assuming that the desirability of a uniform differential has been demonstrated in the cases now reopened and in previous cases. They show that the readjustment would mean many reductions, both on gas and fuel and on crude oil, but many of these reductions, of course, are in rates on low-grade oils which have never been revised in line with the commission's opinion as to a reasonable relation between refined and low-grade oils."

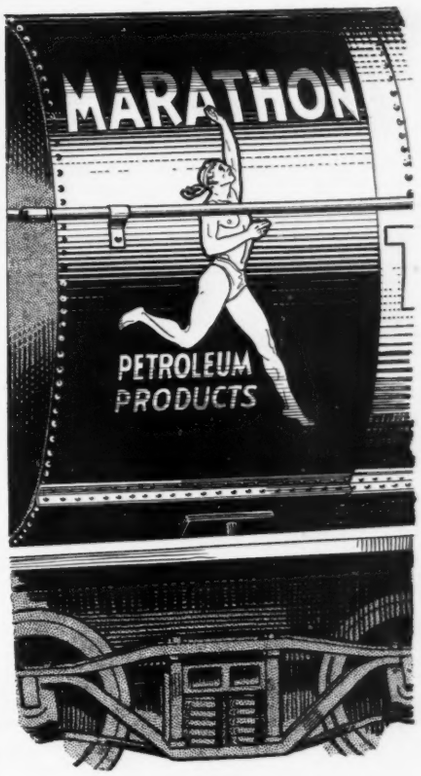
Off the coast of Iceland.

First shipwrecked Geologist— "Oil as I live and breathe."

Second S. G.—"Quick, wire Harry Sinclair."

REDWOOD FALLS, MINN., Dec. 13.—The Redwood County Oil Co. is erecting a modern service station, 14 by 24 feet, which will cost about $6000. It will contain a sales room, a private office, and a woman's rest room. The station will have a canopy. The company has been in business one year and James A. Baikie, secretary, says it has done a fine business.

MARATHON SERVICE
goes farther than most



Tank Car Lots

Ranger Cylinder Stock
Boynton Steam-Refined
Cylinder Stock
Boynton "E" Filtered
Cylinder Stock
Gasoline
Kerosene

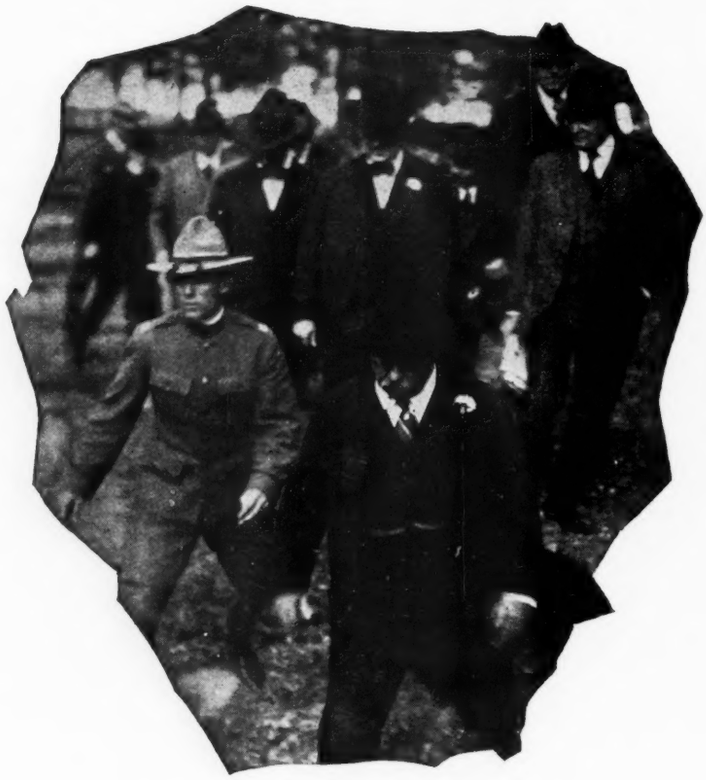
TRANSCONTINENTAL
OIL COMPANY

Refineries:
Fort Worth, Tex. Bristow, Okla. Boynton, Okla

Address inquiries to nearest wholesale office:

PITTSBURGH
TULSA
CHICAGO
ATLANTA

Retail branches in Principal Cities



"It is far from enough for us to develop merely a great *material* prosperity."
—Theodore Roosevelt"

TO have many good oil men say "Berry's Sons—They are fine people to do business with!" is a real achievement. And you know they do say that about Berry's Sons.

For thirty years we have worked with a knowledge of our business and a fidelity to our customers' interests that warrant this judgment.

But if every evidence of material prosperity we have were destroyed this minute, Berry's Sons Company would come right back instantly to leadership because of its well-won and everlasting asset—the respect and good will of jobbers and refiners.

Ask us to quote on any petroleum product so we may demonstrate the value of logical buying to you.

JAMES B. BERRY'S SONS COMPANY

REFINERS and WHOLESALERS
PETROLEUM PRODUCTS

Oil City, Pa: Chicago · New York · Boston · Philadelphia · Tulsa · London, Eng.

ROOSEVELT SERIES

REFINERY-TANK WAGON MARKETS

Mid-Continent Markets Climbing; Gasoline Is Bullish

Staff Special

TULSA, Dec. 22.

MID-CONTINENT refinery markets continued their climb during the past week adding ¼ to ½ cent per gallon to prices quoted on gasoline at the opening of the week and 5 cents to fuel oil. With little material in the market at any price, refiners should be able to enjoy their Christmas dinner in a more hearty fashion than they did the annual Thanksgiving turkey.

Advances have been entirely due to domestic business. Exporters have not re-entered the market since their recent attempt to buy which resulted in driving the price of high gravity material up ¾-cent per gallon but netted them little in the way of gasoline.

From Oklahoma and Kansas plants the movement of gasoline is still in excess of production. The same is true in Louisiana and Arkansas. In Texas there has been some accumulation of stocks since the first of the month.

If the increasing prices have driven business away from the field it has not made itself felt to date. It is hard to find a refiner in Group 3 who is able to furnish car numbers to buyers within two or three days. Many are completely sold up on all of the goods they can possibly get out until after the first of the year.

Sharp Price Advance

A new mark for Navy gasoline to shoot at was set up the middle of the week by Cosden & Co., the Empire Refineries, Inc., and Roxana Petroleum Corp., when they established a price to the trade of 8½ cents per gallon. In the case of the Empire the new price was an advance of 1 cent per gallon. It had been selling on the open market at 7½ cents, although Cosden and Roxana have not been active in the spot market for some time. Skelly Oil Co. has announced a price of 8 cents per gallon on Navy and is reported to be very little interested in business at even that figure.

The eyes of all refiners in the southwest are centered now on the tank wagon structure in the marketing territory of the Standard Oil Co. of Indiana. With the Group 3 refinery market rising consistently so far during the month, it has already drawn uncomfortably close to the tank wagon. Refiners generally would like to see the retail market advance to give them more room in which to build up a more substantial price structure for their own account.

More strength is apparent in the Indiana tank wagon this week than has been seen for some time. Peace has been declared in the price war around Indianapolis and Dec. 20 the Standard advanced gasoline 2 cents at Detroit to iron out the sag at that point. Generally speaking the Indiana tank wagon shows a more even structure than it has for several months.

Tank Wagon Stronger

It is the idea of many refiners that the building up of former weak points in the price structure is an indication that the time may not be far distant when the entire price will be raised. They look on present activity as a forerunner.

Hope is general that the tank wagon will move upwards before Mid-Continent crude is raised. From a manufacturing standpoint the refiner will not be helped if the tank wagon lags behind as conditions clear up and crude is marked up first.

Action of large refiners in the Mid-Continent in advancing their price to 8½ cents is looked on by some as an effort of manufacturers with many marginal contracts both to average up their return on gasoline sales and to force an advance in the tank wagon. In normal times it is generally conceded that the Indiana tank wagon will be advanced when the Mid-Continent market gives evidence of strength at a point close enough to the retail market to warrant the upward movement.

Refiners can see no good reason why the Indiana market should not be advanced before crude goes up. They point out that in the past the retail price has not been so low as at present on $1 crude. An advance of at least 2 cents per gallon is justified now, they assert. The last 2-cent cut posted by the Standard of Indiana was not needed, according to the views of some while others contend that it was forced by competitive conditions which caused a large number of uneven price situations throughout the territory.

Generally speaking both producers and refiners in the Mid-Continent are expecting an advance in crude before Feb. 1. With production still declining, the competition for oil is keen as may be seen from the fact that the Champlin Refining Co at Enid posted a price of $1.75 per barrel for 40-gravity crude this week, and premiums of 25 cents are being paid in Burbank as well as smaller amounts in southern Oklahoma.

It is understood that one of Champlin's competitors has gone him one better and posted a price of $1.85, an advance of 65 cents over the Prairie's price.

Receivers for the Sapulpa Refining Co. this week sold the crude storage of that plant amounting to about 200,000 barrels to the Tidal Refining Co. Another sale of a similar amount was reported from a producer to an Independent refiner.

Cheapest Navy 7½ Cents

New Navy gasoline is not available in the market today at less than 7½ cents per gallon. Most of the plants are quoting 7¾ cents direct to the trade and are unwilling to make any concessions from that figure.

Naptha prices are around 7 cents nominally although it appears impossible to buy the material at any price.

High gravity gasolines are quoted at all sorts of prices. Some refiners are asking as much as 10 cents for 64-66, 375 end point while some business has been done at as low as 9 cents per gallon within the past day or two. The general level of 68-70 gasoline is 10 cents and above although a little has been sold at 9¾ by one or two refiners with a small accumulation of that grade.

Natural Gasoline Looks Up

Chestnut & Smith Corp. has been an active buyer of natural gasoline this week. It has not been paying prices above the general market but its activity has resulted in the elimination of sacrifice goods and a general raise in the level of quotations.

It is impossible to buy Grade C compression in Oklahoma today at less than 5 cents per gallon although earlier in the week some changed hands at as low as 4½ cents Strictly Grade A is scarce with a much higher price. Some has sold as high as 7 cents where the gravity was low and business is being done on the regular product at 6¼ to 6¾ cents.

While manufacturers are finding less sales resistance to natural gasoline the trade appears to be unwilling yet to pay much more than 5¼ cents on Grade C. Quotations at that figure are common but it is not known that any has sold that high in the last few days.

Sinclair Refining Co. purchased 50 cars of prime white kerosene in Group

(Concluded on page 89)

natural gasoline

grade "a"

GRAVITY.....Not below 72° Be.
Not above 78° Be.
E. P.....Not over 375° F.
RECOVERY.....Not less than 90%

grade "b"

GRAVITY.....Not below 76° Be.
Not above 82° Be.
E. P.....Not over 375° F.
RECOVERY.....Not less than 85%

grade "c"

GRAVITY.....Not below 80° Be.
Not above 88° Be.
E. P.....Not above 350° F.
RECOVERY.....Not less than 78%

grade "d"

GRAVITY.....Not below 88° Be.
Not above 92° Be.
E. P.....Not above 350° F.

The most active and powerful thing in the universe is the infinitesimal particle called the "Electron". It is the source of all action and power. The *NATURAL GASOLINE* constituent of motor fuel is strikingly akin thereto.

If you want power, action, economy and a quick start in your motor on a cold winter's morning add — plenty of *NATURAL GASOLINE* to your motor fuel.

Chestnut & Smith Corporation have large manufacturing, storing and shipping facilities, and can supply your *NATURAL GASOLINE* requirements promptly in carload or trainload lots at most any time.

We shall appreciate the opportunity of quoting you. Be sure and get in touch with us at all times before buying *NATURAL GASOLINE.*

C & S CORPORATION

grade "1"

GRAVITY.....Not below 58° Be.
Not above 62° Be.
E. P.....Not over 437° F.
RECOVERY.....Not less than 91%

grade "2"

GRAVITY.....Not below 58° Be.
Not above 62° Be.
E. P.....Not over 450° F.
RECOVERY.....Not less than 90%

grade "3"

GRAVITY.....Not below 64° Be.
Not above 66° Be.
E. P.....Not over 440° F.
RECOVERY.....Not less than 88%

grade "4"

GRAVITY.....Not under 66° Be.
Not over 70° Be.
E. P.....Not over 435° F.
RECOVERY.....Not less than 85%

CHESTNUT & SMITH CORPORATION

GENERAL OFFICES ~ CHESTNUT & SMITH BLDG. ~ TULSA OKLA.

Refinery Markets On Light Oil Products

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

GASOLINE AND NAPTHA

PENNSYLVANIA	Prices Dec. 24	Prices Dec. 17	Prices Dec. 10
50-52 Naptha	9 - 9¼	8¾- 9	9 - 9¼
54 Naptha	- 9½	9¼- 9½	9¼- 9½
58 Gasoline	10 -10¼	9¾-10	9¾-10
60 Straight-run gasoline	-11	10½-11	10½-10¾
62 Straight-run gasoline	-12	11½-12	11¼-11½
64 Straight-run gasoline	-13	12½-13	13 -13¼
68 Straight-run gasoline	-16½	16 -16½	16 -16½
68-70 Blend, 450 E. P	10 -10½	10 -10¼	-10
60-62 Blend, 450 E. P	10 -10½	9¾-10	-10
62-64 Blend, 450 E. P	10 -10½	9¾-10	-10
66-68 Blend, 440 E. P	10¼-10½	-10¼	-10½
68-70 Blend, 440 E. P	10¼-10½	10¼-10½	-10½
68-70 Blend, 420 E. P	11 -11½	10½-11	-10¾
OKLAHOMA			
48-50 450 E. P. naptha	6⅞- 7⅛	6¼- 6½	5¾- 6
50-52 450 E. P. naptha	7 - 7¼	6½- 6¾	6 - 6¼
56-58 450 E. P. gasoline	7⅛- 7½	6¾- 7	6¼- 6¾
58-60 (New Navy) 437 E.P.1811.b.p.	7½- 7¾	7 - 7¼	6¾- 7
60-62 400 E. P. gasoline	8¼- 8½	8 - 8¼	7¾- 8
64-66 375 E. P. gasoline	9 - 9½	9 - 9¼	8¾- 9
68-70 350 E. P. gasoline	10 -10¼	9¾-10¾	9½-10
NORTH TEXAS			
48-52 450 E. P. naptha	6¾- 7	6 - 6¼	5¾- 6
56-58 450 E. P. gasoline	7 - 7¼	6¼- 6½	6 - 6¼
56-58 New Navy gasoline	7¼- 7½	6¾- 7	6½- 6¾
58-60 New Navy gasoline	7½- 7¾	7 - 7¼	6⅝- 6⅞
60-62 400 E. P. gasoline	8 - 8½	8 - 8¼	7½- 7¾
64-66 390 E. P. gasoline	8¾- 9¼	8¾- 9	8¼- 8¾
64-66 375 E P. gasoline	9¼- 9½	9 - 9¼	8¾- 9
NORTH LOUISIANA			
56-58 450 E. P. gasoline	7¼- 7½	6¾- 7	6½- 7
58-60 437.Navy Gasoline	7½- 7¾	7¼- 7½	6¾- 7¼
64-66 390-400 E. P. Gasoline	9¼- 9½	8¾- 9	8½- 8¾
ARKANSAS			
58-60 450 E. P. gasoline	7½- 7¾	7 - 7¼	6¾- 7
58-60 Navy gasoline	7¾ 8	7½- 7¾	7 - 7¼
64-66 375 E. P. gasoline	9¼- 9¾	9 - 9¼	8½- 9

NATURAL GASOLINE

OKLAHOMA			
Grade A, 72-78 375 E.P., 90% Rec	6¼- 6¾	5¾- 6	5¼- 5¾
Grade B, 76-82 375 E.P., 85% Rec	5¾- 6	5 - 5¼	5 - 5¼
Grade C, 80-88 350 E.P., 78% Rec	5 - 5¼	4¾- 5	4¾- 5
Grade D, 88-92 350 E. P	5 - 5¼	4¾- 5	4¾- 5

(Motor Natural Gasoline—Blends)

OKLAHOMA	Prices Dec. 24	Prices Dec. 17	Prices Dec. 10
Grade 1, 58-62 437 E.P., 91% Rec	6¾- 7	6¼- 6½	6 - 6¼
Grrde 2, 58-62 450 E.P., 90% Rec	6¾- 7	6¼- 6½	6 - 6¼
Grade 3, 66-64 440 E.P., 88% Rec	6¾- 7	6¼- 6½	6 - 6¼
Grade 4, 66-70 435 E.P., 85% Rec	6¾- 7	6¼- 6½	6 - 6¼
NORTH TEXAS			
Grade A, 72-78 Absorption	6 - 6¼	5¾- 5½	5 - 5¼
Grade C, 80-88 Compression	4¾- 5	4¾- 5	4½- 5

(Motor Natural Gasoline—Blends)

Grade 1, 58-62 437 E. P	6¼- 6¾	6¼- 6½	6 - 6¼
Grade 2, 58-62 450 E. P	6½- 6¾	6¼- 6½	6 - 6¼

BURNING OILS

PENNSYLVANIA			
45 Water White	7¼- 7½	7 - 7¼	7 - 7¼
46 Water White	7½- 8	7½- 7¾	-7¾
47 Water White	8 - 8½	8 - 8¼	8 - 8¼
300 Burning Oil	7¾- 8¼	7¾- 8¼	7½- 8
OKLAHOMA			
41-43 Water White	4¼- 4¼	4¼- 4½	4¼- 4¼
42-44 Water White	4⅛- 4¾	4½- 4¾	4⅜- 4¾
NORTH TEXAS			
40-42 Prime White Distillate	4 - 4¼	4¼- 4½	4½- 4¾
41-43 Water White Kerosene	4½- 4¾	4½- 4¾	4¾- 5
NORTH LOUISIANA			
41-43 Water White Kerosene	5 - 5¼	5 - 5¼	5 - 5¼
ARKANSAS			
41-43 Water White Kerosene	4¾- 5	4¾- 5	4½- 4¾
42-44 Water White Kerosene	5 - 5¼	5 - 5¼	4¾- 5

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

Gasoline And Fuel Both Stronger; Other Oils Steady

CHICAGO, Dec. 22.—Volume of gasoline trade which in November was equal to September in many places, has held up to the present in Standard Oil Co. of Indiana territory. Marketers and refiners in close touch with the trade in several districts as well as companies having widely distributed stations, say December will be a close rival to November if the weather keeps up. That, of course, is speculation. Should the weather man lay a blizzard over the middle west, gasoline consumption would drop off sharply.

Although the price of gasoline is strong now and has advanced steadily from a weak 6 cents in October to a stiff 7½, there are those who believe the price curve is due to dip, weather or no weather. Nobody thinks it will be depressed for long, but just long enough for the jobbers to dispose of some of the goods they are buying on a rising market now. Large marketers in this territory are not gambling on a continuation of good winter weather, so there is little or no speculative buying by persons without storage.

Kerosene is not strong, but apparently it has not weakened in the past week. This is decidedly an off-season for kerosene as a motor fuel but the demand for use in domestic burners is considerable. There are several types of household burners whose manufacturers insist work best with kerosene and that demand keeps the 41-43 grade at 4¾ cents while 42-44 costs a little more. Export demand for kerosene several days back depleted stocks of material suitable for European consumption.

Domestic distillates are weak but have not fallen off in price. Quotations, because of differences in specifications, still vary widely, 3¼ to 3¾ cents.

Again the weather has been an important factor in the market.

Gas oil is a little stronger at 2½ cents this week than last. It appears that several of the smaller gas companies in this vicinity have been inquiring and some small sales have been made as high as 2⅝ cents but the volume of business done in gas oil has been small so far as public service companies are concerned. Domestic burners are a factor in the gas oil market, also.

Fuel oil has taken a turn for the better this week. The 75-cent quotation of last week has disappeared and all substantial concerns are getting at least 80 cents. In some cases refiners and marketers are getting 85 cents and quotations even higher are heard. Smackover crude fuel has partaken of the strength of the higher priced fuels also and the common quotation this week has been 57½ to 62½ in Chicago.

South Texas Lubes Stronger

HOUSTON, Dec. 24.—Satisfactory movement of south Texas lubricants continues at slightly advanced prices. Manufacturers report demand is greatest for 200, 300 and 500 viscosity grades of pale oils but the situation in general is all that can be expected. December business has exceeded the record made in the first three weeks of November. Gas oil is stronger at higher levels and fuel is in good spot demand.

TIME TO TURN
to Winter Gasoline
Offer Your Customers
MIDLAND
Cold Weather Special
62-64 Gravity—390-400 End
or
60-62 Gravity—400 End
64-66 Gravity—375 End
60-62 Gravity—420-430 End
66-68 Gravity—365-375 End
Skelly Oil Company
El Dorado, Kansas

Refinery Markets On Lubricants, Heavy Oils

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

NEUTRAL OILS

PENNSYLVANIA	Prices Dec. 24	Prices Dec. 17	Prices Dec. 10
(Viscous Test 70)			
200 Vis. No. 3 Assoc. Filt.	27½-28	-26	25½-26
180 Vis. No. 3 Assoc. Filt.	25 -25½	-24	23½-24
150 Vis. No. 3 Assoc. Filt.	22 -22½	-21	21 -21¼
(Non-Viscous)			
34 350-360 Flash	7¾- 8	7½- 8	7½- 8
36 Miners Neutrals 300-305 Flash	7¼- 7½	- 7	- 7
OKLAHOMA			
(Viscous Test 100)			
70 Vis. at 100°F. No. 2½-3 color	3½- 4	3½- 4	3½- 4
100 Vis. at 100°F. No. 2 color	4¾- 5¼	4¾- 5¼	4¾- 5¼
100 Vis. at 100°F. No. 2½-3 color	4½- 5	4½- 5	4½- 5
150 Vis. at 100°F. No. 3 color	9½-10	9½-10	9½-10
150 Vis. at 100°F. No. 4 color	9 - 9¼	9 - 9¼	9 - 9¼
180 Vis. at 100°F. No. 3 color	12 -12½	12 -12½	12 -12½
180 Vis. at 100°F. No. 4 color	11¼-11¾	11¼-11¾	11¼-11¾
180 Vis. at 100°F. No. 5 color	10½-11	10½-11	10½-11
180 Vis. at 100°F. No. 6 color	9¾-10¼	9¾-10¼	9¾-10¼
200 Vis. at 100°F. No. 3 color	13 -13½	13 -13½	13 -13½
200 Vis. at 100°F. No. 4 color	12¼-12¾	12¼-12¾	12¼-12¾
200 Vis. at 100°F. No. 5 color	11½-12	11½-12	11½-12
200 Vis. at 100°F. No. 6 color	10¾-11¼	10¾-11¼	10¾-11¼
220 Vis. at 100°F. No. 3 color	14 -14½	14 -14½	14 -14½
220 Vis. at 100°F. No. 4 color	13¼-13¾	13¼-13¾	13¼-13¾
220 Vis. at 100°F. No. 5 color	12½-13	12½-13	12½-13
220 Vis. at 100°F. No. 6 color	11¾-12¼	11¾-12¼	11¾-12¼
240 Vis. at 100°F. No. 3 color	15 -15¼	15 -15¼	15 -15¼
240 Vis. at 100°F. No. 4 color	14¼-14¾	14¼-14¾	14¼-14¾
240 Vis. at 100°F. No. 5 color	13½-14	13½-14	13½-14
240 Vis. at 100°F. No. 6 color	12¾-13¼	12¾-13¼	12¾-13¼
280 Vis. at 100°F. No. 3 color	17½-18	17½-18	17½-18
280 Vis. at 100°F. No. 4 color	16½-17	16½-17	16½-17
280 Vis. at 100°F. No. 5 color	15½-16	15½-16	15½-16
280 Vis. at 100°F. No. 6 color	14½-15	14½-15	14½-15
300 Vis. at 100°F. No. 6 color	14¾-15¼	14¾-15¼	14¾-15¼
SOUTH TEXAS **(Viscous Test 100; cold test 0)**			
100 Vis. No.2 Color Unfilt. Pale	7 - 8	7 - 8	7 - 8
150 Vis. No.2½ Color Unfilt. Pale	9½-10½	9½-10½	9½-10½
200 Vis. No.3 Color Unfilt. Pale	-12½	11 -12	11 -12
300 Vis. No.3 Color Unfilt. Pale	13½-14½	13½-14½	13½-14½
500 Vis. No.3½ Color Unfilt. Pale	-16½	15 -16	15 -16
750 Vis. No.4 Color Unfilt. Pale	-23	21 -22	21 -22
200 Vis. No 2 Filt. Pale	-23	-23	-23
300 Vis. No.2 Color Filt Pale	-26	-26	-26
500 Vis. No.2½ Color Filt. Pale	-29	-29	-29
750 Vis. No.2½ Color Filt. Pale	-39	-39	-39
200 Vis. No.5½ Color Red Oil	-11	9½-10½	9½-10½
300 Vis. No 5½ Color Red Oil	11½-12½	11½-12½	11½-12½
500 Vis. No.6 Color Red Oil	13½-14½	13½-14½	13½-14½
750 Vis. No.6 Color Red Oil	-21	19½-20½	19½-20½

CYLINDER OILS

PENNSYLVANIA	Prices Dec. 24	Prices Dec. 17	Prices Dec. 10
600 Steam Refined	-14	11¾-12½	11¾-12
635 Steam Refined	-15½	14 -14½	-14
650 Steam Refined	-17½	15½-15¾	15 -15¾
600 Flash	-19	-18	-18
600 Warren E	-18½	-17	-16½
600 Oil City E	-17½	15½-16	-15½
600 Filtered D	22½-23	20½-21	21 -21½
Cold Test Stocks (bright filtered)	-34	32 -33	31½-33
Cold Test Stock (dark filtered)	31 -32	-30	29 -30
Black Oil	6 - 7	6 - 7	6 - 7
OKLAHOMA			
Bright Filtered Stock	26 -31	26 -31	26 -31
Medium Filtered Stock	-16	-16	-16
600 Steam Refined Olive Green	4¾- 5	4¾- 5	4¾- 5
600 Steam Refined Dark Green	3¾- 4½	3¾- 4½	3¾- 4½
Black Oil	3 - 3½	3 - 3½	3 - 3¼

WAX

PENNSYLVANIA **(Per Pound New York)**			
122-124 White Crude Scale	- 3½	- 3½	3¼- 3½
124-126 White Crude Scale	- 3½	- 3½	- 3½
OKLAHOMA **(Per Pound Group 3)**			
124-126 White Crude Scale	3 - 3¼	3 - 3⅛	2¾- 3

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil	5 - 5¼	4⅞- 5⅛	4⅞- 5⅛
30-34 Fuel Oil	4¾- 5	4⅝- 4⅞	4⅝- 4⅞
OKLAHOMA			
40-42 Prime White Dist.	4 - 4¼	4 - 4¼	4 - 4¼
38-40 Straw Distillate	3 - 3¼	3 - 3¼	3 - 3¼
36-38 Straw Distillate	2¾- 3	2⅞- 3⅛	2⅞- 3
32-36 Gas Oil (Gal.)	2¾- 2⅞	2¼- 2⅝	2¾- 2⅛
24-26 Fuel Oil (bbl.)	.85- .90	.80 -.85	.75-.80
Fuel Oil, buyers, cars (bbl.)	.80- .85	-.80	.70-.75
NORTH TEXAS			
38-40 Straw Distillate	3½- 3¾	3½- 3¾	3½- 3¾
32-36 Gas Oil (gal.)	2¾- 2⅞	2¾- 2⅞	2½- 2⅝
24-26 Fuel, per bbl	.80-.85	.75-.80	.70-.75
South Texas Fuel	1.05-1.15	1.05-1.15	1.05-1.15
South Texas Gas Oil	- 3¼	3 - 3½	2½- 2¾
NORTH LOUISIANA			
32-36 Gas Oil (Gal.)	2½- 2¾	2½- 2¾	2½- 2¾
22-26 Fuel Oil (bbl.)	.70-.75	.75-.80	.60-.70
ARKANSAS			
38-40 Distillate	3 - 3½	3¼- 3½	3 - 3¼
32-36 Gas Oil	2½- 2¾	2½- 2¾	2½- 2¾
22-26 Refinery Fuel Oil	.70- .80	.70- .75	.60- .70
Smackover Crude Fuel	.....	.....	.55- .60
East Field Crude Fuel	.....	.....	- .60

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

Pennsylvania Market Strongest In Many Months

CLEVELAND, Dec. 24—Northwestern Pennsylvania refiners are now having the strongest market that district has had in many months. Lubricating oils are advancing almost daily and gasoline is more active stronger owing to the favorable price in relation to the Mid-Continent prices and to the mild weather which with more improved roads, has permitted the continued use of thousands of automobiles that ordinarily in the past were put up for the winter long before this time of year.

Refiners expected a rather quiet market until after the first of the year but rather heavy export buying of steam refiner stocks coupled with a good domestic demand, caused the market to firm several weeks ago.

The advance in Pennsylvania crude oil provided the punch necessary to convert this situation into a strong seller's market.

Stocks of lubricating oils are low throughout this field and a great amount of business has been turned away in the last week, several of the leading refiners report. Resistance to higher prices has been trivial so eager have been prospective buyers to place their orders. Bright stocks have been the slowest to respond to the improved conditions but these were stronger and 1 cent higher today as compounders are finding motor oil demand much greater than in any previous winter.

Volume of inquiries indicates that demand for viscous neutrals and both steam refined and filtered cylinder stocks will extend well into the new year and probably business will be of sufficient proportions to maintain prices at levels slightly higher than those of the present.

While the size of runs by the various refineries will undoubtedly be increased, demand is now great enough to absorb a considerable increase in output, one of the largest refiners said.

Pennsylvania gasoline is still cheap in relation to Mid-Continent markets, the difference being but 2¾ to 3 cents on 58-60 whereas under normal conditions the differential is around 4 cents. But Pennsylvania refiners are still faced by competition of Atlantic seaboard refin-

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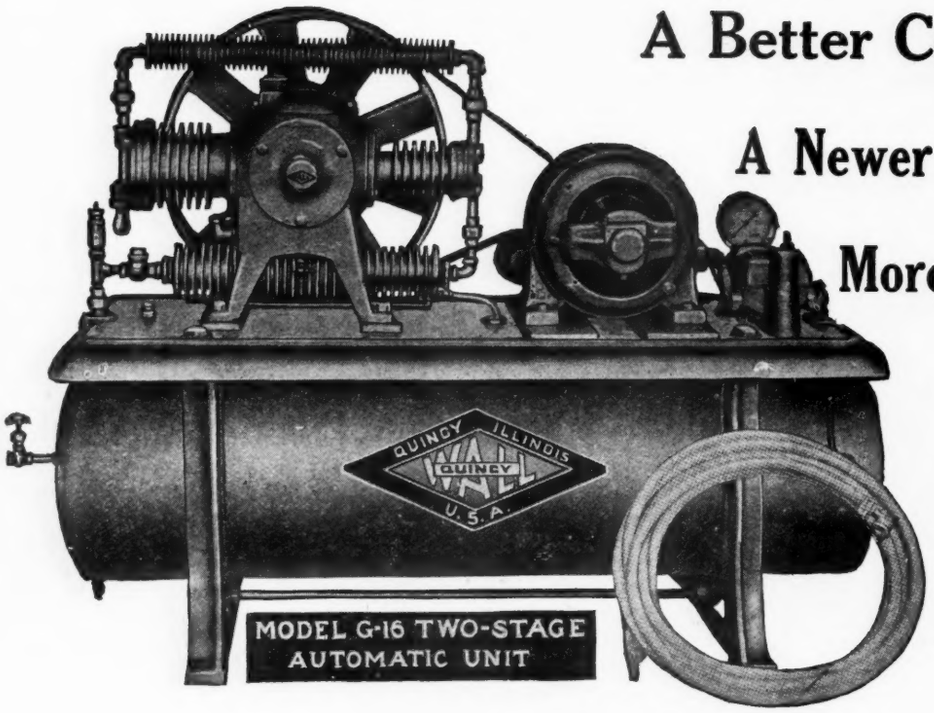
THE QUINCY SILENT AIR-MASTER



A Better Compressor

A Newer Compressor

More Economical

Silent

Efficient

Dependable

12 FACTS

1. Aluminum intercooler delivers cool air to high pressure cylinder.
2. Special finned aftercooler delivers cool air to tank.
3. Fan blade fly wheel, throwing unrestricted rush of air across each finned cylinder, intercooler and aftercooler. Assures cool dry air.
4. Connecting rod assembly, laminated shims for adjustments. This feature is found only in THE QUINCY.
5. THE QUINCY excells all others in easy access to its working parts.
6. THE QUINCY'S tight, solid construction guarantees freedom from vibration.
7. Cylinders are bolted to crankcase, not integral, six cooling fins to each. Pistons are ground to size, rings turned.
8. The splash system assures proper lubrication, automatically lubricates all parts. No reciprocating parts touch oil.
9. The superior valve construction has many exclusive QUINCY features:
   (a) Light weight saw blade steel discs, each weighing fraction of an ounce.
   (b) Spring actuated.
   (c) Minimum lift, 1/32 inch. Ground to seat.
10. The light weight, minimum lift, large bearing surface means long life. Indestructible.
11. Unrestricted air passages.
12. Large air volume at low cost. The fastest pumping compressors on the market.

Write us your requirements. We will quote prices and delivery dates by return mail. Immediate Delivery.

Wall Pump & Compressor Co.

221 Maine Street **Quincy, Illinois, U. S. A.**

Tank Wagon, Service Station Markets
Gasoline and Kerosene

BELOW are given in cents a gallon, the tank wagon price of gasoline without the special taxes levied against motor fuels by many states, the amount of the state taxes, the total tank wagon price, with tax added in and the service station or retail price of gasoline as quoted in the various Standard Oil marketing territories. The right hand column is the tank wagon price of kerosene. By tank wagon price is meant the price to resale agents or dealers. Usually this price does not apply to sales to consumers from tank wagons.

Prices in effect Dec. 24

S. O. NEW JERSEY TERRITORY

	Gasoline T.W.	Tax	Total	S.S.	Oil T.W.
Atlantic City, N. J.	15.5	0	15.5	*	14
Newark, N. J.	15.5	0	15.5	*	14
Annapolis, Md.	15	1	16	*	14
Baltimore, Md.	15	1	16	19	13
Cumberland, Md.	15	1	16	19	15
Washington, D. C.	15	0	15	18	13.5
Danville, Va.	15	3	18	*	15
Norfolk, Va.	15	3	18	19	13
Richmond, Va.	15	3	18	21	13.5
Roanoke, Va.	15	3	18	21	15
Petersburg, Va.	15	3	18	*	14.5
Charleston, W. Va.	15	2	17	20	13.5
Clarksburg, W. Va.	15	2	17	*	14.5
Keyser, W. Va.	15	2	17	*	15
Parkersburg, W. Va.	15	2	17	*	12
Wheeling, W. Va.	15	2	17	20	13.5
Williamson, W. Va.	15	2	17	*	15
Charlotte, N. C.	15	3	18	21	14.5
Hickory, N. C.	15	3	18	*	15
High Point, N. C.	15	3	18	*	14.5
Mt. Airy, N. C.	15	3	18	*	14.5
Salisbury, N. C.	15	3	18	*	15
Charleston, S. C.	15	3	18	21	12.5
Columbia, S. C.	15	3	18	20	14.5

*Dealers set own prices. S. O. New Jersey does not operate station.

S. O. NEW YORK TERRITORY

*New York City	15.5	0	15.5	18	15
Albany, N. Y.	15.5	0	15.5	18	14
Buffalo, N. Y.	14	0	14	17	15
Rochester, N. Y.	15	0	15	19	13
Syracuse, N. Y.	15	0	15	17	12
Boston, Mass.	14.5	0	14.5	17	13

*In steel barrels.

ATLANTIC REFINING TERRITORY

Pittsburgh, Pa.	14	0	14	19*	14
Philadelphia, Pa.	14	0	14	19*	14
Allentown, Pa.	14	0	14	19*	14
Scranton, Pa.	14	0	14	19*	14
Altoona, Pa.	14	0	14	19*	14
Dover, Del.	14	1	15	18	14
Wilmington, Del.	14	1	15	18	14
Providence, R. I.	15	0	15.5	18	14
Springfield, Mass.	14.5	0	14.5	17	14
Worcester, Mass.	14.5	0	14.5	17	14
Hartford, Conn.	15.5	1	16.5	19	14
New Haven, Conn.	15.5	1	16.5	19	14
Boston, Mass.	14.5	0	14.5	17	14

Last six cities are Atlantic's chief marketing points in New England. S. O. New York markets there also.

*Contains 2-cent tax collected by dealer and paid by him directly to state.

S. O. OHIO TERRITORY

All Ohio points	16	0	16	18	13

S. O. KENTUCKY TERRITORY

Lexington, Ky.	14	1	15	17	14
Louisville, Ky.	13	1	14	16	13
Covington, Ky.	15	1	16	18	13
Clarksdale, Miss.	13	1	14	16	14
Jackson, Miss.	13	1	14	16	12
Natchez, Miss.	12.5	1	13.5	15.5	13.5
Vicksburg, Miss.	12.5	1	13.5	15.5	13.5
Birmingham, Ala.	14	2	16	18	13.5
Mobile, Ala.	13	2	15	17	13.5
Montgomery, Ala.	14	2	16	18	16
Atlanta, Ga.	11	3	14	18	14
Augusta, Ga.	15	3	18	20	15
Macon, Ga.	15	3	18	20	15.5
Savannah, Ga.	13	3	16	18	14
Jacksonville, Fla.	13	3	16	18	14
Miami, Fla.	15	3	18	20	15.5
Tampa, Fla.	13	3	16	18	14
Pensacola, Fla.	13	3	16	18	14.5

S. O. CALIFORNIA TERRITORY

Phoenix, Ariz.	16	3	19	22	21.5
Los Angeles, Cal.	10	2	12	15	15.5
Fresno, Cal.	11.5	2	13.5	16.5	17.5
San Francisco, Cal.	11	2	13	16	15.5
Reno, Nev.	14.5	2	16.5	19.5	19
Portland, Ore.	12		15	18	16.5
Seattle, Wash.	12	1	13	16	16.5
Spokane, Wash.	16	1	17	20	20.5
Tacoma, Wash.	12	1	13	16	16.5

S. O. LOUISIANA TERRITORY

	Gasoline T.W.	Tax	Total	S.S	Oil T.W.
Camden, Ark.	13.5	3	16.5	18.5	13
Little Rock, Ark.	13.5	3	16.5	18.5	13
West Helena, Ark.	13.5	3	16.5	18.5	13
Alexandria, La.	12.5	1	13.5	15.5	13
Baton Rouge, La.	11	1	12	14	11.5
Lake Charles, La.	12.5	1	13.5	15.5	13
New Orleans, La.	11.5	1	12.5	14.5	12
Shreveport, La.	12.5	1	13.5	15.5	13
Bristol, Tenn.	15	2	17	19	15.5
Chattanooga, Tenn.	13.5	2	15.5	17.5	14.5
Knoxville, Tenn.	14.5	2	16.5	18.5	15
Nashville, Tenn.	11.5	2	13.5	15.5	14.5
Memphis, Tenn.	13	2	15	17	14

MAGNOLIA PETROLEUM TERRITORY

Muskogee, Okla.	8	1	9	12	10
Oklahoma City*	12	1	13	16	10
Tulsa, Okla.	8	1	9	12	10
Fort Smith, Ark.	10	3	13	16	12
Little Rock, Ark.	12	3	15	18	13
Texarkana, Ark.	12	3	15	18	12
Dallas, Tex.	11	1	12	15	8
El Paso, Tex.	11	1	12	15	12
Fort Worth, Tex.	11	1	12	15	10
Houston, Tex.	13	1	14	18	11
San Antonio, Tex.	11	1	12	15	9

*These prices are for Oklahoma City territory. Price within city is one cent less.

S. O. INDIANA TERRITORY

Chicago, Ill.	12	0	12	14	10
Decatur, Ill.	12.2	0	12.2	14.2	10.5
East St. Louis, Ill.	11.1	0	11.1	13.35	9.6
Joliet, Ill.	12.4	0	12.4	14.4	10.7
Peoria, Ill.	12.2	0	12.2	14.2	10.5
Quincy, Ill.	12.2	0	12.2	14.2	10.3
Evansville, Ind.	12	2	14	16	10.5
Indianapolis, Ind.	12.2	2	14.2	16.2	10.7
South Bend, Ind.	12.4	2	14.4	16.4	10.9
Detroit, Mich.	12.8	0	12.8	14.8	11.2
Grand Rapids, Mich.	12.7	0	12.7	14.7	11.1
Saginaw, Mich.	12.9	0	12.9	14.9	11.3
La Crosse, Wis.	13.2	0	13.2	15.2	11.4
Madison, Wis.	12.3	0	12.3	14.3	10.5
Milwaukee, Wis.	12	0	12	14	10.2
Duluth, Minn.	13.2	0	13.2	15.2	11.6
Mankato, Minn.	12.8	0	12.8	14.8	11.4
Minneapolis, Minn.	12.9	0	12.9	14.9	11.6
Davenport, Ia.	11.5	0	11.5	13.5	10.9
Des Moines, Ia.	12.5	0	12.5	14.5	10.9
Sioux City, Ia.	12.0	0	12	14	10.5
Kansas City, Mo.*	10.9	1	11.9	13.9	9.3
St. Joseph, Mo.**	11.8	.5	12.3	14.3	10.2
St. Louis, Mo.	11.6	0	11.6	13.9	10
Fargo, N. D.	13.6	1	14.6	16.6	13.6
Grand Forks, N. D.	15.2	1	16.2	18.2	13.9
Minot, N. D.	14.9	1	15.9	17.9	13.6
Huron, S. D.	14	2	16	18	12.1
Pierre, S. D.	14	2	16	18	12.1
Wichita, Kan.	11.8	0	11.8	13.8	9.8
Bartlesville, Okla.	10.9	1	11.9	13.9	8

*Kansas City tax of 1 cent imposed by city.
**St. Joseph tax of ½ cent imposed by city.

S. O. NEBRASKA TERRITORY

Crawford, Neb.	13	0	13	*	11.25
Omaha, Neb.	12.25	0	12.25	14.25	10.5
McCook	13.75	0	13.75	15.75	12
Norfolk	12.75	0	12.75	14.75	11
North Platte	13.75	0	13.75	15.75	11.75
Scotts Bluff	13.25	0	13.25	15.25	11.25

*Standard has no service station here.

CONTINENTAL OIL TERRITORY

Denver, Colo.	12	2	14	16	12.5
Glenwood Sp'gs. Colo.	17	2	19	*	16.5
Pueblo, Colo.	13	2	15	17	12.5
Basin, Wyo.	15	1	16	*	13
Casper, Wyo.	13	1	14	18	11
Cheyenne, Wyo.	14.5	1	15.5	17.5	13
Cody, Wyo.	16	1	17	*	14
Lander, Wyo.	15	1	16	*	13
Sheridan, Wyo.	17	1	18	20	15
Billings, Mont.	16.5	2	18.5	20.5	14.5
Butte, Mont.	18	2	20	22	15
Great Falls, Mont.	18	2	20	22	16
Helena, Mont.	18	2	20	22	16
Miles City, Mont.	17.5	2	19.5	21.5	15.5
Ogden, Utah	15.5	2.5	18	20	15.5
Salt Lake City, Utah	15.5	2.5	18	20	15.5
Boise, Ida.	18	2	20	22	18
Albuquerque, N. M.	17	1	18	20	15.5

*Continental has no service stations at these points.

Week's Price Changes Tank Wagon Market

PHILADELPHIA, Dec. 20.—Atlantic Refining Co. reduced tank wagon price of kerosene 1-cent at its New England marketing points. Dec. 14.

* * *

CHICAGO, Dec. 20.—Standard Oil Co. of Indiana advanced price of gasoline 2 cents at Detroit Dec. 20, bringing to an end a price war that has existed there for almost three months.

* * *

DENVER, Dec. 22.—Continental Oil Co. advanced gasoline prices 1 cent at Denver Dec. 22.

North Texas Markets Grow Stronger

Staff Special

WICHITA FALLS, Dec. 22.—North Texas markets have grown much stronger during the past week. All grades of gasoline are scarce for shipment over the remainder of the month. The export grade of 64-66 is 9¼ and above with some refiners asking as high as 10 cents.

On domestic Navy gasoline refiners are not quoting for future delivery at any price. All gasoline is being sold from day to day at the prevailing price. One refiner sold a large distributing company a quantity of 56-58, 450 end point gasoline over the remainder of the year at 7 cents per gallon and over the first 10 days of January at 7¼ cents.

Considerable quantities of naptha have been moving to blenders this week since the demand for their product has picked up again. The buying has brought about a shortage of blending material and natural gasoline has been strengthened as well.

The movement of kerosene has been normal and stocks are in good shape. Distillate is scarce and demand excellent due to colder weather. The majority of purchasers now are asking for a prime white material of 40 gravity.

There has been a decline in the production of crude fuel in the Luling field which is aiding the market for fuel oil in north Texas. Railroads are more or less active buyers and refiners in Wichita Falls have pushed their price up to 80 and 85 cents per barrel.

Much of the advance in prices in north Texas appears to be a direct result of the general anticipation of higher crude prices.

CHICAGO, Dec. 19.—L. B. Patterson, formerly with Stoddard Oil Co., 17 Battery Place, New York, has recently established a residence in Chicago. He became sales manager of the Northland Oil Co., headed by C. L. Maguire of Chicago, Sept. 1. The Northland recently opened offices in new quarters in the Blum building.

Gasoline And Lubricating Oils Strong In Export Market

By Special Correspondent

NEW YORK, Dec. 24

FEATURING the export market was the sudden strength in gasoline. None of the local refiners announced any price changes but at the Gulf both Navy and 64-66 gravity were marked up. A large Independent quoted Navy at 10½ cents and 64-66 at 13½ cents for nearby shipment out of the Gulf, basing these prices on the advances in Group 3. A cargo of 35,000 barrels of Navy and 64 was reported sold to a large British house, but details regarding price and shipment were withheld.

French and English buyers have been inquiring for large quantities of gasoline to be shipped during March and April but no actual transactions of consequence other than the above mentioned were reported. Practically nothing is being offered around at the old levels, and it is expected that big European interests will enter the market with a rush before further price advances occur. Cased gasoline demand is growing but this business is being booked by the leading refiners. Small Independents are not getting much. Shipping space to the Far East is still rather scarce.

Locally, the price in tank cars delivered to the domestic trade has been advanced ¼ cent and refiners are now getting 9½ cents and in some instances 10 cents a gallon for Navy.

Interest in Lubricants

Considerable interest developed in the cylinder stocks, and one of the leading refiners sold two cargoes of assorted lubricants for early 1924 shipment out of the Gulf. One called for 30,000 barres and the other 25,000. The former is going to Germany and the latter to England, according to reports. Dark and filterel stocks are receiving most of the attention.

The boost in Pennsylvania crude has bettered sentiment considerably the past few days and those in possession of sizable quantities of lubricating oil show more disposition to hold on to what they have. They expect higher prices. Pennsylvania 600 steam refined in barrels, New York, is well maintained at 20 to 22 cents a gallon and not a great deal is available at the inside price.

Gas oil has become active and two cargo sales were reported for nearby shipment out of the Gulf to Europe. It is rumored that the Shell Marketing Co. purchased 30,000 barrels of 32-34 gravity oil at around 3½ cents but confirmation was lacking. At any rate German and Scandinavian buyers are purchasing more freely, and most of the sellers in the Gulf district are now unwilling to sell 26-28 below 3½ cents a gallon. Stocks on hand are rather light just now. A Hamburg house was credited with the purchase of some 25,000 barrels of 26-28 for February shipment out of the Gulf.

Locally the market for 36-40 while very dull is somewhat firmer reflecting the strength in the southwestern gas oil market. There is very little doing but refiners are unwilling to sell below 4¼ cents a gallon in bulk f. o. b. New York harbor refinery.

Bunker Oil Demand Improves

Bunker oil is enjoying a better export demand, although foreign buyers as a rule are not very anxious to stock up at prevailing prices. Grade C oil is generally quoted at $1.35 per barrel and there is little or no talk regarding impending cuts. In fact, sentiment has swung the other way and the trade is rather bullish regarding the outlook. Diesel oil is enjoying a much better movement at $1.57½ a barrel, f. o. b. New York harbor refinery. Stocks on hand are not large and prices are fairly buoyant. Furnace oil is dull at around 8 cents, refinery.

Kerosene appears to be scarcer than ever and prices are tending a little higher although no actual fluctuations were reported. At the Gulf prime white is held at 6¼ cents to the export trade and water white at 6¾ cents. It is rumored that considerable business has gone over at this figure. However, most of the big refiners here are not in a position to offer much kerosene and trading was along conservative lines. A cargo of prime white is reported to have been sold to United Kingdom buyers by one of the leading Independents but details were withheld.

Waxes are Firmer

Waxes are firmer but no further advances were noted. Most of the big refiners are doing a fairly steady business at unchanged prices. White crude scale wax is moving to continental Europe in a steady stream and orders calling for from 100 to 200 tons are numerous. Italian and Scandinavian buyers have been purchasing a little more freely of the match waxes but the fully refined descriptions are not in so good demand as expected.

Petrolatums are steady. Snow white is firmly maintained at 12 cents for the good descriptions while lily white is bringing 9½ cents and there are few sellers who are willing to do business below this level. Dark green is moving in a spasmodic way.

Russian medicinal oil is in fair request, but much of the buying of late has been confined to actual requirements and no important developments came to light during the week. Domestic oils are quiet at unchanged prices.

British Importations

During the week ended Dec. 3 there were imported into the United Kingdom 14,348,745 gallons of petroleum. Larger receipts at London included 1,851,480 gallons of gasoline to the Anglo-American Oil Co. from Sabine, Texas. The Shell Marketing Co. received the following shipments: 741,820 gallons of benzine from Balik Pappan; 666,850 gallons of benzine from Sumatra, and 251,940 gallons of fuel oil from Singapore. At Southampton the Anglo-American Oil Co. received 1,045,910 gallons fuel oil from Chalmette and the British-Mex Petroleum Co. received 1,930,410 gallons of fuel oil from Tampico. At Swansea the National Oil Refineries received the following shipments of crude oil from Abadan: 2,594,740 gallons; 2,459,890 gallons and 2,464,270 gallons.

LEWISTOWN, MONT., Dec. 21.—The Northwestern Independent Oil Association will hold its quarterly meeting Jan. 15 in the Placer Hotel, Helena. This association is made up of refiners and jobbers. H. Earl Clack, of Havre, is president; E. L. DeMers, Lewistown, vice-president and C. H. Brown, Lewistown, secretary-treasurer.

New York Market

The following prices are quoted by eastern seaboard independent refineries on products which are manufactured from Mexican crude transported from Tampico to the refinery by tanker and from California crude.

	Dec. 24
*Gasoline (New Navy) gal., Tank Cars	09½
‡Bunker oil (F.O.B. New York) bbl.	1.35
Gas Oil (36-40 refinery) gal.	.04¼
†Kerosene, 45-150 W.W.Bulk Del.,N.Y.nom.	.08½

*Delivered.
†Nominal.
‡Plus .06½ charge lighterage.

Export Markets

Furnished to N. Y. Produce Exchange by big exporting oil companies. No actual sales. Record for statistical purposes only.

Illuminating Oils

	Dec. 24	Dec. 17
Bulk, gal., Bayonne	7.00	7.00
Barrels, gal., Bayonne, cargo	14.00	14.00
Cases, gal., Bayonne	17.15	17.15

Prices for water white oil (150 test) are 1 cent higher than those for standard white.

Gasoline-Naptha
(Cents per Gallon)

U. S. Navy, dead bulk	10.50	10.50
U. S. Navy, cases	24.40	24.40
Export grade, bulk	12.00	12.00
63-66 deg. bulk	14.00	14.00
63-68 deg. bulk	15.50	15.50

Tide Water Oil Company
(f. o. b. Bayonne)

59-60 deg. bulk	11.50	11.50
59-61 deg cases	24.40	24.40
Export grade, Navy Specifications bulk	10.50	10.50
63-65 deg. bulk	14.00	14.00
68-72 deg. bulk	16.50	16.50

	Bulk	Barrels	Cases
Standard white 110	7.00	14.00	17.15
Water white 150	8.00	15.00	18.15

The Texas Company

Gasoline, cases	24.40	24.40

Kerosene	Bulk	Barrels	Cases
Standard White	7.00	14.00	17.15
Prime White	7.50	14.50	17.65
Water White	8.00	15.00	18.15

(Continued from page 81)

3 this week for export through its terminal at Westwego. One other small order was reported placed. Movement generally has been better and prices are slightly stiffer than at the first of the week. It appears impossible to buy a doctor test kerosene for less than 4½ cents today although some untreated goods is moving at ⅛ cent less.

Lubricating oils are quiet with no change in the general level of quotations. It is thought probable by some refiners that the price will not be advanced by major factors until there is an increase in crude prices.

Little has been heard of gas oil or burning distillates this week. Movement has been fair but the strength of the gasoline market has overshadowed all other trading.

Fuel Oil Advances

Movement of fuel oil maintains a high rate. All refinery districts in the southwest except Texas sold more fuel and gas oil during the week ended Dec. 15, than was manufactured. In Texas refiners began an accumulation by producing around 5,000,000 gallons more than they sold In spite of this the field as a whole increased its stocks only 2,356,619 gallons to a total of 101,129,313 gallons. At the rate of sale durnig the week stocks represented a supply of only 19 days.

Buyers in Oklahoma and Kansas are finding it difficult to buy any quantity of fuel for immediate delivery, even by bidding up the price. Resale buyers paid 85 cents per barrel yesterday and today and some is moving to the trade at 90 cents.

On new commercial fuel contracts a new basis is being put into effect by refiners. The new basis provides that the buyer shall pay 80 per cent of the price of crude for his fuel when crude is low as at present. As crude advances the percentage declines to a low of 60 per cent on $3 crude. Refiners feel that the new type of contract is much fairer to both buyer and seller than the old flat 60 per cent basis. They hope that they will be able to renew railroad fuel contracts on a similar basis when they expire.

N. Y. Jobbers Plan Tax Fight

SYRACUSE, N. Y., Dec. 20.—A meeting of the New York State Petroleum Marketers Association is to be called in the near future to consider the proposition for a state tax on gasoline now before the legislature. A two-cent tax is being talked. According to H. E. Mills, of the C. E. Mills Oil Co. here, the oil men of the state may undertake an investigation to attempt to show just how much of the state license tax on motor cars goes into good road work.

State officials say that a state tax is the only method by which tourists can be assessed for road improvement. The oil men say they are prepared to urge a reduction in the license tax if a state tax on gasoline is proposed.

Refiners' and Jobbers' Supplies

Following are the average market prices for the week on the principal materials used by refiners and jobbers, f.o.b. shipping point as effective this date.

		Dec. 24	Dec 17
***Benzol**			
Pure Water White, Tanks	gal.	—.23-28	23-28
Drums	gal.	—.28-33	28-33
90% Tanks	gal.	—.21-26	21-26
Drums	gal	—.26-31	26-31
Refiners' Supplies			
Soda Ash light 58%	cwt.	$1.38-1.50	$1.38-1.50
Silicate of Soda 60 deg. Drums	cwt.	—1.70	—1.70
Sal Soda wks	cwt.	1.10-1.30	1.10-1.30
Caustic Soda 76% solid	cwt.	3.10-3.17	3.10-3.25
Chloride of Lime	cwt.	1.25-1.35	1.25-1.35
Sulphuric Acid 60 deg. tank cars f. o. b. shipping point	per ton	11.00	9.00-11.00
Jobbers' Supplies (Open Market)			
Vegetable Oils—			
*Linseed, carloads Spot	gal.	—.92	—.91
December		—.92	—.91
January		—.92	—.91
February-March		—.91	—.90
March-April		—.90	—.90
May-August		—.86	—.85
Tanks, spot		—.86	—.85
Less carload Spot	gal.	—.95	—.95
5 Bbls	gal.	—.98	—.98
Tess than 5 Bbls. Spot		—.97	—.97
Boiled, tank Spot	gal.	—.88	—.88
Boiled, carloads Spot	gal.	—.94	—.94
Soya Bean Spot, Tanks	lb.	—.10½	—.10¾
Animal Oils—			
English Degras	lb.	$—.04¾	$—.04¾
Domestic Degras, bbls. carloads	lb.	—.03¾	—.03¾
*Horse	lb.	—.07½	—.07½
Oleic Acid—			
Dist	lb.	08—.08½	—.08½
Saponified	lb.	08—.08½	—.08½
Lard Oils—			
Prime Winter Strained	1 to 1½ ffa.	.40/45c.t.lb.	$.15¾	$.15¾
Extra Winter Strained	2 to 4½ ffa.	.40/45c.t.lb.	.15¼	.13¾
Extra	4 to 5 ffa.	.40/45c.t.lb.	.12¼	.12¾
Extra No. 1	7 to 10 ffa.	.40/50c.t.lb.	.10¾	.10¾
No. 1	15 to 18 ffa.	.40/45c.t.lb.	.10¼	.10¼
No. 2	22 to 23 ffa.	.40/45c.t.lb.	.09¾	.09¾
Prime Edible Tallow under 1¾ ffa. 40/45c.t. N.Y.	lb.	.09—.09¼	.09¼
Tallow acidless	lb.	—.11½	.11½
Lard Stearine	lb.	—.15½	.15½
Oleo Stearine	lb.	—.10¾	.10¾
Neatsfoot Oil—			
Pure	bbls.-lb.	.14¾	.14¾
Extra	do lb.	.10¾	.11¾
No. 1	do lb.	.10¼	.10¼
Cold pressed	lb.	.17½	.17½
Fish Oils—			
Menhaden Oil Light pressed	gal. $	—.65	—.65
White	gal.	—.70	—.70
Yellow bleached	gal.	—.68	—.68
*Herring, tank cars coast	gal.	—.40	—.40
Whale, extra winter bleached	gal.	.81	.81
Seal	gal.	Nominal	
Naval Stores—			
Turpentine, N. Y.	gal.	.93½	.93½
Turpentine†	gal.	.86½	.86½
Rosin B. N. Y	Bbl.	5.70	5.65
Rosin F. N. Y	Bbl.	5.70	5.70
Rosin B.†	Bbl.	4.40	4.30
Rosin F†	Bbl.	4.40	4.30
Rosin Oil 1st run	gal.	.43	.43
Rosin Oil 2nd run	gal.	.46	.46
Pine Tar—			
Kiln Burnt	Bbl.	11.00	11.00
Retort	Bbl.	11.00	11.00

†Savannah, Ga. market.
‡Carlots.
*Nominal.

Spot Chemicals Quiet; Prices Steady

By Special Correspondent

NEW YORK, Dec. 24.—Makers of caustic soda and soda ash are not doing much spot business now but have already booked considerable for delivery over the first quarter of 1924. Prices were well maintained and deliveries against previously placed contracts, are fair.

The movement of benzol was not so large as it was a few weeks ago and some observers anticipate lower prices in the near future. However, this belief is by no means general. Bleaching powder was steady and no price changes were recorded. The call for sulfuric acid is light and spasmodic.

There has been a much improved inquiry for linseed oil the past few days but actual demand is rather slack. Crushers have advanced their forward positions a trifle. Spot raw oil in carlots cooperage basis was fairly well maintained at 92 cents a gallon. This price was also quoted for January delivery. February-March was held at 91 cents and March-April at 90 cents while May-August was 86 cents against 85 cents the previous week. Leading consumers are purchasing sparingly, in view of the proximity of inventory season, and no sizable trades were uncovered during the entire week. The movement in boiled oil has been a trifle better than expected with export buyers showing more interest.

Soya bean oil was scarce and firmly maintained at 10½ cents a gallon in tanks on spot. Not a great deal of buying interest was done.

Animal oils were fairly steady the greater part of the week. Prices were without important change. Neatsfoot oil is moving along more generous lines at unchanged prices. Lard oil is holding up fairly well but business has been spasmodic, with consumers inclined to hold off.

Oleic acid was dull and easy at 8 to 8½ cents representing a decline of ½ cent for the week. Stearic acid was not so firm as expected and some observers look for reductions soon. Degras and horse oil have been marking time.

Fish oils are a trifle easier but no radical price changes have taken place. Crude menhaden oil is quoted at 47½ to 50 cents a gallon in tanks at the factory. Light pressed in barrels New York is still held at 65 cents a gallon. The bleached oils are meeting with a slightly better request. Herring and whale oils, however, are dull and unchanged.

Rosins have looked up a little and the cheaper descriptions were advanced 5 cents reflecting the strength in the south. Buyers are purchasing more freely and there is not a great deal to be had on spot. Export demand is also much better. Spirits of turpentine was unusually quiet at 93½ cents a gallon in wooden barrels ex yard New York. Stocks are not very large. Rosin oil was sluggish and unchanged.

Nicholas Tells Details Of Cosden Option

CHICAGO, Dec. 22.—When jobbers' profits are unusually narrow and refiners have ceased to offer marginal contracts and the whole oil industry is wondering whether Indiana tank wagon prices will be boosted before or after Mid-Continent crude oil goes up, it is "hot news" when a trade association offers marginal contracts.

The story appearing in column 3, page 24, of the Dec. 19 issue of **National Petroleum News** created no little excitement in this territory. It related how L. V. Nicholas, president of National Petroleum Marketers' Association, was offering 10,000,000 gallons of Cosden & Co. gasoline to association members on marginal contracts at about 6 cents.

The story was printed in shorter form in Platt's Oilgram on Wednesday and the brevity and absence of details in the article served only to tease the jobbers who would be glad to protect themselves just now with a comfortable margin for the rest of the winter at least. No wonder a clamor arose.

An extra corps of telephone operators would not have come in badly during the first two or three hours after the report was out. So in order to clear things up, Mr. Nicholas made a public statement about the matter. The option on the goods was obtained by the Northland Oil Co. last October when prices were down. Now the N. P. M. A. has the option.

John M. Carson, president of the Taxman Refining Co., and L. B. Patterson, sales manager of the Northland Oil Co., agree that this statement of Mr. Nicholas' is correct. The Nicholas statement follows:

"There has been more or less confliction of statements and misunderstandings relative to a deal this organization has for marketing to their members approximately 10,000,000 gallons of the Cosden & Co., gasoline for the years 1924 and 1925.

"For the purpose of clearing up wild rumors, we desire to say that this gasoline was obtained by the association through the Northland Oil Co. of which C. L. Maguire is president, and covers gasoline which we have the privilege of offering to our members in the Standard of Indiana territory.

"It was contracted by them through some time during the middle of last the Taxman Refining Co. of Chicago, October and we are today issuing a circular letter to our members in the Standard of Indiana territory, offering them whatever portion of the gasoline they can use to the extent of this 10,000,000 gallons."

PARSONS, KAN., Dec. 22.—C. C. Cory has sold the Quality Oil Co. to the Elgin Independent Oil Co. of Kansas City. F. E. North is to manage for the Elgin company here.

Crude Oil Prices All Fields

EASTERN FIELDS

	1923 Dec. 24	1922 High		1922 Low		1921 High		1921 Low	
Bradford-Allegany	$2.85	Jan. 1	$4.00	July 19	$3.00	Jan. 1	$6.10	June 29	$2.25
Other Pennsylvania	2.60	Jan. 1	4.00	July 19	3.00	Jan. 1	6.10	June 29	2.25
Cabell	1.35	Jan. 1	2.61	July 19	1.86	Jan. 1	4.46	June 29	1.11
Corning	1.40	Jan. 1	2.40	July 20	1.75	Jan. 1	4.00	June 29	1.20
Somerset	1.30	Jan. 1	2.40	July 19	1.65	Jan. 1	4.50	June 29	1.00
Somerset Light	1.45	Jan. 1	2.65	July 19	1.80	Jan. 1	4.25	June 29	.90
Ragland	.75	Jan. 1	1.25	July 19	1.00	Jan. 1	2.60	June 29	.60

Somerset oil run on and after Oct. 1, 1922, takes price of 6 cents higher than above quotation.

CENTRAL STATES FIELDS

Wooster	$1.40	Jan. 1	$2.70	Sept. 21	$1.90	Jan. 1	$4.95	June 27	$1.80
Lima	1.53	Jan. 1	2.48	July 20	1.98	Jan. 1	3.78	June 27	1.58
Indiana	1.33	Jan. 1	2.28	July 20	1.78	Jan. 1	3.63	June 27	1.38
Princeton	1.32	Jan. 1	2.27	July 20	1.77	Jan. 1	3.77	June 27	1.27
Lodi	1.40	Jan. 1	2.70	July 20	1.90	Jan. 1	4.00	June 27	1.80
Illinois	1.32	Jan. 1	2.27	July 20	1.77	Jan. 1	3.77	June 27	1.27
Waterloo, Ill.	.80	Jan. 1	1.75	July 20	1.25	Jan. 1	1.75	June 27	.75
Plymouth	.70	Jan. 1	1.65	July 20	1.15	Jan. 1	3.48	June 27	.65
Canadian Petrolia	1.98	Jan. 1	2.88	July 20	2.38	Jan. 1	4.13	June 27	1.98
Western Ky.	1.30	Jan. 1	2.40	July 19	1.65	Dec. 1	2.40	June 27	.58

MID-CONTINENT AND NORTH TEXAS FIELDS

Below 33	.75	Currie	1.00
33-39.9	1.00	Mexia	1.00
40 and above	1.25	Powell	1.00

Magnolia's Price Schedule
North and North-Central Texas

Under 28	.40	39 and above	1.30
28-30.9	.60	Corsicana, light*	1.00
31-32.9	.75	Corsicana, heavy	.40
33-35.9	1.00	Thrall	1.00
6-38.9	1.15	*Including Powell	

HUMBLE O. & R. PRICES
(Ranger and Burkburnett)

Below 30	.80	36-38.9	1.15
30-32.9	.90	39 and above	1.30
33-35.9	1.00		

Note: Texas Co.'s prices same as above except on two lower grades. Texas paying 75 cents for oil below 33 gravity.

NORTH LOUISIANA-ARKANSAS FIELDS

Caddo, 38 degrees and above	$1.10	El Dorado, below 33	1.00
do 35 to 37.9	1.00	Bull Bayou, 38 and above	1.05
do 32 to 34.9	.90	do 35 to 37.9	.90
do below 32	.75	do 32 to 34.9	.75
Homer, 35 and above	1.10	De Soto	1.10
do 33 to 34.9	1.00	Crichton	.90
do 31 to 32.9	.90	Bellevue	.75
do below 31	.75	Smackover, 26 and above	.75
Haynesville, 33 and above	1.00	25 to 25.9	.60
do below 33	.90	24 to 24.9	.50
El Dorado, 33 and above	1.10	Below 24 Be.	.40

GULF COASTAL FIELDS

	1923 Dec. 24	1922 High		1922 Low		1921 High		1921 Low	
Spindletop	$1.00	Jan. 1	$1.25	Dec. 30	$1.25	Jan. 1	$2.50	June 13	$ .80
Goose Creek	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Goose Creek "B"	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.70
Sour Lake	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Humble	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Batson	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Hull "A"	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Hull "B"	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
West Columbia	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Edgerly	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Vinton	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Jennings	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Dayton	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Saratoga	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80

WYOMING FIELDS

Elk Basin	$ .95	Jan. 1	$1.90	Aug. 4	$1.20	Jan. 1	$3.10	June 27	$1.00
Grass Creek	.95	Jan. 1	1.90	Aug. 4	1.20	Jan. 1	3.10	June 27	1.00
Big Muddy	.45	Jan. 1	1.40	Aug. 4	.70	Jan. 1	2.75	June 27	.50
Salt Creek	.60	Jan. 1	1.40	Aug. 4	.70	Jan. 1	2.75	June 27	.50
Lance Creek	.90	Jan. 1	1.90	Aug. 4	1.20	Jan. 1	3.05	June 27	.95
Rock Creek	.60	Jan. 1	1.50	Aug. 4	.80	Jan. 1	2.85	June 27	.60
Osage	.90	Jan. 1	1.90	Aug. 4	1.20	Jan. 1	3.05	June 27	.95
Cat Creek, Mont	.95	Jan. 1	1.90	Aug. 4	1.20	Jan. 1	3.10	June 27	1.00
Sunburst, Mont	.70								

CALIFORNIA

14-19.9	$ .60	25-25.9	.66	30-30.9	$ .71
20-20.9	.61	26-26.9	.67	31-31.9	.72
21-21.9	.62	27-27.9	.68	32-32.9	.73
22-22.9	.63	28-28.9	.69	33-33.9	.74
23-23.9	.64	29-29.9	.70	34-34.9	.75
24-24.9	.65			35 and above	.76

Moderate Temperatures To Continue

CHICAGO, Dec. 23.—The early part of this week bids fair to be blessed with moderate temperature and clear skies except in the region of the Great Lakes where the weather man has not ceased to hope he can give the public a "White Christmas." Efforts to produce snow by the 25th may result in a drizzle, however, the forecaster admits. Elsewhere in the middle west the prophets express confidently will be much like day.

The latter part of the week may develop most anything. "Unsettled" is the word used by the government weather experts. But they go so far as to say the temperature may be lower and the entire forecast district subjected to some precipitation—maybe snow. Even though there is no snow Christmas it looks as if it might be possible to use the car during the holidays, and that will recompense the oil men for the absence of sleigh bells, etc.

Last Monday and Tuesday and Wednesday were fair in Standard Oil Co. of Indiana territory. There was some rain in the southern states along the Gulf of Mexico, but South Carolina alone had more than an inch of rainfall. Indiana territory did get its rain in the latter part of the week, but even then it was not heavy. Galveston got more than an inch late in the week and Memphis had more than two inches but the heavy rains were local and did not affect the general movement of oil.

(Continued from pp. 85)

ers who are operating with cheap crude oil. Blends also are stronger.

kerosene and fuel oil markets. While

The mild weather has retarded the some refiners were inclined to advance kerosene prices because of the crude oil price advance, and holding their output when resistance was met, others have held to former prices in an effort to prevent an accumulation of burning oil.

Paraffin wax is still active and little is obtainable on the open market. Prices are firmly maintained.

Kentucky

Kentucky refiners have advanced their gasoline prices ⅜-cent a gallon over the last week and predict another advance after Christmas. Only the low prices in Pennsylvania are holding down the Kentucky market, refiners say. No resistance to higher prices has been met. Today's gasoline quotations in central Kentucky were: 58-60, 9⅛ cents; 60-62, 10⅛; 62-64, 10⅝; 64-66, 11¼; 66-68, 12¼, and 68-70, 13¼. In the Cincinnati district, 58-60 was 10½ cents.

Kerosene trade is holding up fairly well and price has been advanced to 6¾ cents, central Kentucky. Most of the fuel oil output has been sold up but central Kentucky refiners are nominally quoting 3⅝ cents. At Cincinnati the price is 4½ cents. Gas oil is unchanged at 4¼ to 4½ cents.

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OIL STOCKS AND FINANCES

Mexican Seaboard Oil Reports Deficit

NEW YORK Dec. 22.—Mexican Seaboard Oil Co. and its subsidiary in Mexico, the International Petroleum Co. report a deficit of $8,012 for the third quarter after expenses, interest and reserve for drilling expenditures. The deficit for the first nine months of the year was $170,964, after like charges, as compared with a surplus of $9,220,167 in the first nine months of 1922.

The income account for the third quarter exclusive of the operations of the International's subsidiary, Cia. International Petroleo y Oleoductos, S. A., follows:

Gross revenue	$1,104,082
Expenses	1,006,437
Balance	$ 97,645
Other income	189,431
Total Income	$ 287,076
Interest	61,250
Reserve, drilling expenditures	233,838
Deficit*	$ 8,012

*Before providing for depletion.

The Cia. Internacional reports:

Gross operating revenue	$570,124
Operating expenses	246,017
Balance	$324,107
Other income	73,719
Profit before amortization	$397,826

Income accounts of the Mexican Seaboard and International for the first three quarters of 1923 and 1922 report:

	1923	1922
Gross	$3,335,844	$21,695,758
Operating expenses	2,959,670	12,343,741
Balance	$ 376,174	$ 9,352,017
Other income	267,155	222,128
Total income	$ 643,329	$ 9,574,145
Debenture interest	183,750	353,978
Res. drilling expenses	630,543	.....
Def. before depl. & fed. taxes	$ 170,964	*$9,220,167

*Surplus

Foregoing statement does not include earnings of Cia Internacional de Petroleo y Oleoductos, S. A.

Glenrock Writes Down Lease Values

DENVER, Dec. 20.—Sixth annual report of Glenrock Oil Co. first made to stockholders since new officers and board of directors under presidency of Max W. Ball and a consolidation of its operations with Marine Oil Co., reveals a drastic writing down of leases and stocks from boom time values to values, in cash or in stock at par, at time of purchase. A result was the addition of $5,210,165 to deficit account.

President Ball states that the reduced values are none too conservative. Actual commercial values cannot be determined except by geological appraisal which the company hopes to undertake so that next year's report may show the real facts as to property value.

Glenrock's share of production in Salt Creek from Jan. 1 to Sept. 30, 1923, has averaged 142 barrels a day. Pilot Butte production for same period averaged 82 barrels and chance of increased production is remote.

Condensed consolidated balance sheets as of Aug. 31, 1923, shows:

ASSETS	
Leaseholds	$2,504,670
Well and field equipment	431,248
Furniture and fixtures	3,145
Total property	2,939,063
Investments in other cos.	490,516
Cash	560
Accounts receivable	5,976
Excess of cost of stocks of subsidiaries over par value	1,798,856
Deficit	5,581,593
Total	10,816,567
LIABILITIES	
Capital stock	$9,571,486
Minority int. in subsidiaries	43,626
Ohio Oil Co. current acct. payable from future prod.	231,960
Current Liabilities:	
Notes payable	79,000
Accts. payable	27,452
Reserve for Depreciation	3,045
Surplus by stock donation	859,995
Total	10,816,567

Empire Increases Net

NEW YORK, Dec. 20.—Empire Gas & Fuel Co. of Delaware and subsidiaries reports for the 12 months ended Aug. 31 net earnings of $12,634,770 available for interest, reserves and dividends as against $10,090,614 in the 12 months ended Aug. 31, 1922. Gross earnings were $44,739,229 as against $38,110,429.

Oil Dividends

	Am't	Payable	Stock of Record
Indiana Pipe Line q	$2	Feb. 15	Jan. 18
International Pet q	25c	Jan. 2	Dec. 22
Magnolia Pet q	$1	Jan. 5	Dec. 22
Oil Fuel Supply q	2½%	Jan. 15	.....
Lone Star Gas q	1½%	Dec. 31	Dec. 24
do extra	½%	Dec. 31	Dec. 24
Pan American q	$2	Jan. 21	Dec. 31
do B q	$2	Jan. 21	Dec. 31
Pittsburgh O. & G	5%	Dec. 24	Dec. 21
Prairie Pipe q	$2	Jan. 31	Dec. 31
Western States m	1%	Dec. 31	Dec. 15
White Eagle q	50c	Jan. 20	Dec. 31

Cleveland Stock Market

	Par value	Dec. 21 Bid	Asked	1922 High	Low
National Refg	25	38	39½	55	31¾
do pfd	100	116	120½	123	118
Paragon Refg	25	5¼	5¾	16¼	10¼
do pfd	100	40	43	80	75
Fred G. Clark Co	10	2	2½	11	6

Plans Full Ownership In Amalgamated Oil

SAN FRANCISCO, Dec. 20.—Stockholders of the Amalgamated Oil Co., controlled by the Associated Oil Co., will meet Dec. 28 to consider a proposal to sell Amalgamated assets to Associated and merge the two companies. The merger is to be effected by an exchange of 4.8 shares of Associated stock, par value $25, for each share of Amalgamated, par value $100. Associated proposes to pay $6,000,000 for the assets of the controlled company and assets all of the Amalgamated's liabilities.

Associated now owns 50.01 per cent of the outstanding $5,000,000 Amalgamated stock. P. G. Williams, secretory of Amalgamated, says his company's capital has been fully occupied meeting competition, and securing and developing lands, all in southern California, and that the company several times has had to borow from the Associated. It is the desire to eliminate duplication of expenses by merging.

Associated has closed a contract with Cities Service Refining Co. for 2,000,000 barrels of crude to be delivered by Cities Service tankers to the refinery at East Braintree, Mass.

Financial Notes

Cumberland Pipe Line Co.—Directors and officers re-elected at annual meeting.

Royal Dutch Co.—Interim dividend of 10 per cent declared payable Jan. 16. This will amount to about $1.31 on each New York share.

Shell Transport & Trading Co.—Interim dividend of 2 shillings a share declared payable Jan. 5. This is same as declared a year ago.

Pure Oil Co.—Discussions of financing have been dropped because of improved outlook in the oil industry.

Pittsburgh Oil & Gas Co.—First dividend declared since 1921 was paid Dec. 24. Gross earnings for company in 10 months ended Oct. 31 were $755,293. Production and operating expenses were $363,329, leaving net before reserves of $391,964. On Oct. 31 current assets were $485,410 and current liabilities, $60,468.

National Transit Co.—C. J. McClintock has been selected a director and F. G. Zimmerman secretary to fill vacancies caused by the death of S. R. Ball.

Transactions In Oil Shares On New York Stock Exchange

1922 High	1922 Low	1923 High	1923 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Dec. 21 Sales	First	High	Low	Last &	Ch'ge
185½	91	134	98¼	$40,000,000	$100	Associated Oil	1½Q	July 25, 23	.....	.....	.....	.....	.....	.....
.....	.....	29	24¾	40,060,500	25	do new	87½Q	Oct. 25, 23	4,500	28⅞	28⅞	27½	28⅛	— ⅜
1575	117	160	98¾	50,000,000	100	Atlantic Refining	$1Q	Dec. 15, 23	3,200	124	127	124	127	+3½
119½	114	120	115	20,000,000	100	do pfd	1¾Q	Nov. 1, 23	100	117	117	117	117	+1
56¼	19¾	35	9⅞	13,000,000	25	Barnsdall Corp. A	.62½	Apr. 30, 21	6,300	16⅛	16½	15⅜	15⅝	— ¾
89	17	22	6	8,713,275	25	do B	.62½	Apr. 30, 21	2,900	10⅜	10⅜	9¾	10	— ⅛
15¼	6¾	9⅛	1¼	150,000	N.P.	Caddo Central O. & R.	.....	.....	3,000	2¾	2¾	2	2	— ⅜
71⅞	45⅛	29¾	17½	17,377,000	25	California Petroleum	48¾Q	Dec. 1, 23	72,300	25½	25½	24¼	24¾	— ½
98½	85	110½	90½	12,989,500	100	do pfd	1¾Q	Oct. 1, 23	1,100	100	100	†98	98	+ ¾
54	31⅜	62⅛	22¾	1,217,427	N.P.	Cosden & Co	$1Q	Aug. 1, 23	90,800	35½	36⅛	33¾	34⅜	— ⅞
102½	93½	109⅜	85	6,998,000	100	do pfd	1¾Q	Dec. 1, 23	200	90¾	90½	90¾	90½	+ ¼
73¾	37¼	54	23	19,830,000	100	General Asphalt Co.	.....	.....	41,200	37	41¼	35	41¼	+5¼
111	68½	83	60	7,416,100	100	do pfd	1½Q	Dec. 1, 23	3,000	69	74¼	69	74¼	+5¼
78	45	50¾	40	3,236,600	100	Gilliland Oil Pfd	2	May 15, 21	.....	.....	.....	.....	.....	.....
91¾	61¼	78	40¾	25,000,000	100	Houston Oil Co	.....	.....	33,300	68⅞	71½	65½	69½	0
.....	.....	11¼	3⅜	450,000	N.P.	Independent Oil & Gas	.....	.....	13,200	6¾	6¾	6	6⅜	+ ½
25	12	19	1	5,000,000	25	Indiahoma Refining	‡.15	July 1, 21	4,000	2⅛	2¼	1⅝	1⅞	— ⅛
11⅝	5⅜	8½	2½	7,830,450	10	Indian Refining	.50	Dec. 15, 20	22,600	4	6¼	4	4⅜	+ ⅜
20¼	12½	19¾	7⅜	671,280	N.P.	Invincible Oil	.....	.....	78,800	13	15¾	13	15¼	+2⅞
8	¼	⅝	.03	25,709,510	10	Island Oil & Trans	.....	.....	.....	.....	.....	.....	.....	.....
7⅛	1½	8⅛	⅛	14,662,890	10	Kansas & Gulf	.....	.....	6,000	⅜	1	⅜	⅜	+ ¾
.....	.....	27⅝	16	251,300	N.P.	Maracaibo Oil	.....	.....	8,400	26⅝	28	25	27⅜	+ ⅞
46⅜	22⅝	59⅜	17½	1,161,416	N.P.	Marland Oil Co	$1Q	July 1, 23	70,700	36⅝	37⅜	35	36	— ⅝
322	106¾	203	182	46,942,800	100	Mexican Petroleum	4Q	Oct. 20, 23	.....	.....	.....	.....	.....	.....
108	79¼	105⅜	100¼	12,000,000	100	do pfd	2Q	Oct. 20, 23	.....	.....	.....	.....	.....	.....
34½	14½	23¾	5¾	444,894	N.P.	Mexican Seaboard	.50Q	June 1, 23	16,800	15⅜	16¼	15	15⅜	— ⅛
32⅛	12	23¾	6	261,000	N.P.	do V. T. C.	.50Q	June 1, 23	7,400	14	14⅝	13¾	14	0
16	11	12¼	3½	29,791,450	10	Middle States Oil	.30Q	July 1, 23	97,000	7	7½	6⅜	6½	— ⅜
62	47	67	31	39,626,000	25	Ohio Fuel Supply	.56¼	Oct. 15, 23	400	32⅜	33	32	33	+1¾
4⅜	1⅜	3⅛	⅜	5,359,425	5	Oklahoma P. & R.	2	Apr. 1, 21	3,500	1½	1½	1⅜	1¼	— ⅛
69¾	42½	48⅞	31¼	3,500,000	N.P.	Pacific Oil Co	$1SA	July 20, 23	81,600	47¾	48¼	46¾	47¾	+ ⅜
100⅜	48⅞	93½	53	48,292,450	50	Pan-American P. & T	$2Q	Oct. 20, 23	16,200	64¾	64¾	62	62⅞	—2¼
95¾	44	86	50½	81,087,650	50	do B	$2Q	Oct. 20, 23	65,600	61⅞	61⅞	59¾	60	—1½
12	3	6¼	1¼	198,770	N.P.	Panhandle P. & R.	.....	.....	300	2	2¼	2	2¼	+ ¼
73	61	68	27½	2,935,200	100	do pfd	2Q	July 2, 23	100	27¾	27¾	†27¾	27¾	.....
59¼	28¼	69⅝	19¾	1,183,282	N.P.	Phillips Petroleum	.50Q	Oct. 1, 23	64,000	34	34⅜	32	32¾	—1¼
12	4	6	1¾	29,622,925	25	Pierce Oil Corp.	.....	.....	3,700	2⅝	2¾	2⅝	2⅝	— ⅜
71	32	44½	18	15,000,000	100	do pfd	2	Feb. 1, 22	2,000	28½	28½	26	27	—2
51	24⅛	58⅜	17	37,450,350	50	Producers & Refiners	50Q	Sept. 15, 23	49,700	29⅜	31½	28⅞	30¾	+1¾
49	36	49⅛	36	2,845,350	50	do pfd	87½Q	Nov. 5 23	200	47½	47½	46⅞	46⅞	— ⅝
38¾	26½	32	16¼	69,998,450	25	Pure Oil Co	37½Q	Dec. 1, 23	25,400	20¾	21½	20¼	20¾	+ ½
102¾	94	100	82½	15,000,000	100	do 8% pfd	2Q	Oct. 1, 23	300	91	91⅝	91	91⅝	+1⅜
67	47¼	55⅛	40½	553,516	15.40	Royal Dutch, N. Y. shares	₤.15	Aug. 10	2,000	49¼	49¼	47¾	48¼	—1⅜
48½	34⅜	41¼	29⅜	156,334	£1	Shell Transport	1.13½	July 26, 23	100	32	32	32	32	—1¾
13¼	12⅜	19¼	12⅜	8,338,790	N.P.	Shell Union	.25Q	Dec. 31, 23	52,000	15⅞	17	15⅝	16⅞	+ ⅜
96⅛	90	95	90	20,000,000	100	do pfd	1¾Q	Nov. 15, 23	100	91½	91½	91½	91½	— ⅜
.....	.....	16	6½	6,469,100	10	Simms Pet	.....	.....	8,400	11¾	11¾	10¾	11½	0
38¾	18¾	39⅜	16	4,479,738	N.P.	Sinclair Consolidated	.50Q	Nov. 30, 23	144,200	26⅜	26¾	24⅝	25¾	— ¼
102	97⅜	99⅛	80¼	19,278,600	100	do pfd	2Q	Nov. 15, 23	600	86	86	85½	86	0
11⅞	8¾	35	12⅜	20,579,090	25	Skelly Oil	.....	.....	10,500	24½	24½	23⅛	23¾	— ⅜
155	91¾	64⅛	47⅛	231,867,100	25	S. O. California	.50Q	Dec. 15, 23	66,800	59¾	62⅝	59¾	62½	+3½
250½	169	44¼	30⅜	501,274,200	25	S. O. New Jersey	.25Q	Dec. 15, 23	36,400	37	37⅜	36¾	37¼	+ ¼
120	113¾	118¼	114¾	199,972,900	100	do pfd	1¾Q	Dec. 15, 23	600	117	117	116¾	117	0
10¼	4	6¾	2	451,708	N.P.	Superior Oil	.50	Dec. 20, 20	8,000	2¾	2¾	2	2	— ¼
52¼	42	52⅞	34⅜	164,450,000	25	The Texas Co	.75Q	Dec. 31, 23	26,900	42⅝	43¼	41¾	42¼	— ⅜
32¾	18½	24¾	5½	8,380,340	10	Tex. Pac. Coal & Oil	.25Q	June 30, 23	20,700	12⅜	12½	10⅝	11¼	— ¾
134	109¾	144	94	49,996,400	100	Tide Water Oil Co	2	Dec. 30, 21	1,600	117	119⅜	116⅜	119	+4
20½	7½	14½	1¼	2,000,000	N.P.	Transcontinental Oil	.....	.....	116,800	3	4⅜	3	3¾	+ ⅜
134¾	85⅜	99¾	81	18,000,000	100	Union Tank Car Co	1¼Q	Dec. 1, 23	100	93	93	93	93	+1
113	102	114	106	12,000,000	100	do pfd	1¾Q	Dec. 1, 23	100	107½	107½	107½	107½	— ½
34	25	30⅜	20	460,000	N.P.	White Eagle Oil & Ref	.50Q	Oct. 20, 23	5,400	25½	26	24¾	25½	— ⅜
11⅜	2¼	5⅜	¼	288,622	N.P.	White Oil Corp.	.....	.....	5,300	⅞	⅞	⅝	⅞	+ ¼

*New High †New Low ‡In Scrip xEx—Dividend Total Sales 1,396,400

Standard Oil Stock Traded In New York Curb Market

1922 High	1922 Low	1923 High	1923 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Dec. 21 Sales	First	High	Low	Last	Ch'ge
25	16¾	19¾	13½	£3,000,000	£1	Anglo-American Oil	46⅔S.A.	May 15, 23	7,100	15¾	16	15	15¾	0
13⅛	4¾	7¾	2½	(ah)500,000	N.P.	Atlantic Lobos	.....	.....	5,400	2½	5⅜	2½	4¾	+2¾
610	335	150	113	1,000,000	100	Borne-Scrymser	4S.A.	Oct. 15, 23	10	150	150	150	150	0
110	83	94½	69	10,000,000	50	Buckeye Pipe Line	$1.50Q	Dec. 15, 23	730	70	71	69¾	70	0
225	175	237	207	1,500,000	100	Chesebrough Mfg	3½ Q	Dec. 29, 23	.....	.....	.....	.....	.....	.....
113	104	.....	.....	1,000,000	100	do pfd	1¾Q	Dec. 28, 23	.....	.....	.....	.....	.....	.....
153	125	50	32½	10,000,000	25	Continental Oil	50 Q	Dec. 15, 23	2,800	43	43½	42	42¾	+ ¾
49	28	47½	15	1,500,000	25	Crescent Pipe Line	37½ Q	Sept. 15, 23	.....	.....	.....	.....	.....	.....
135	115	168	85	3,000,000	100	Cumberland Pipe Line	10A	Dec. 15, 23	70	105	107	105	107	+2
103½	70½	117	87	5,000,000	100	Eureka Pipe Line	2Q	Nov. 1, 23	50	97	97	96	96	—1
62	40	78	55	16,000,000	100	Galena Signal Oil	1Q	Dec. 31, 23	115	67½	67½	67½	67½	— ½
105	100	105	104	4,000,000	100	do new pfd	2Q	Dec. 31, 23	.....	.....	.....	.....	.....	.....
114	104	.....	.....	2,000,000	100	do old pfd	2Q	Dec. 31, 23	.....	.....	.....	.....	.....	.....
367	212½	41¼	28	45,750,000	25	Humble Oil & Ref	30Q	Oct. 1, 23	4,200	36½	37	36¼	36½	+ ½
198	154	171	115	20,000,000	25	Illinois Pipe Line	3 S.A.	Dec. 31, 23	270	135	140	135	140	+5
130¾	97½	128	92	30,222,750	25	Imperial Oil, coupons	75 Q	Dec. 1, 23	6,215	109	112½	106½	111	+4
111	84	103	78	5,000,000	50	Indiana Pipe Line	$2 Q	Nov 15, 23	220	85	85½	83	84	0
27½	14	24⅞	13¼	(sh)7,188,138	N.P.	International Petroleum	25c	June 30, 23	41,700	17⅜	18½	16½	18¼	+1¾
259	150	168	125	150,000,000	100	Magnolia Petroleum	1Q	Oct. 5, 23	1,525	143	147½	143	145	+2½
31⅛	23	29	19½	6,362,500	12½	National Transit	50Q	Dec. 15, 23	900	21	22½	21	21¼	— ⅜
214	117	137	70	5,000,000	100	New York Transit	2Q	Oct. 15, 23	205	76	78	75	75	—3
127	90	110	95	4,000,000	100	Northern Pipe Line	5 S.A.	July 1, 23	70	94	96	94	95	0
365	71	85½	48¾	60,000,000	25	Ohio Oil Co	1Q	Dec. 31, 23	3,900	70	70	67¾	68½	+1
44¾	16	45	10½	10,000,000	25	Penn-Mex Fuel	.....	.....	8,400	44	*45	34	40	+11¼
750	520	700	152	54,000,000	100	Prairie Oil & Gas	2Q	Oct. 31, 23	4,510	225	228	222½	225	+2
325	224	335	93	81,000,000	100	Prairie Pipe Line	2Q	Oct. 31, 23	2,575	100	104	100	102	+2½
405	340	212½	161	4,000,000	100	Solar Refining Co	5 S.A.	Dec. 20, 23	130	169	174	169	171	+2
110	77	116	87	10,000,000	100	Southern Pipe Line	$2Q	Dec. 1, 23	210	91½	91½	89½	90½	— ½
249	150	195	100	20,000,000	100	South Penn Oil	1½Q	Sept. 30, 22	1,060	138	145	138	143	+5
70½	50½	88¼	66¾	3,500,000	100	Southwest Pa. Pipe Lines	2Q	Oct. 1, 23	90	71	81	69	81	+3
135	58¾	69¾	49¼	220,181,638	25	S. O. Indiana	62½Q	Dec. 15, 23	92,100	62¼	64⅞	62¼	63¾	2⅞
690	41	57	36½	8,000,000	25	S. O. Kansas	50Q	Dec. 15, 23	8,300	40¾	42¼	40¾	51⅛	+ ⅜
131	76½	158	83	17,500,000	25	S. O. Kentucky	$1Q	Dec 1, 23	18,000	108⅜	110½	104	110	+6
217	170	285	186	3,000,000	100	S. O. Nebraska	5 S. A.	Dea. 31, 23	50	226	230	225	225	+5
675	41⅜	495⅛	35⅛	225,000,000	25	S. O. New York	35Q	Dec. 15, 23	15,400	43¾	44¼	42½	43⅞	+1½
385	261	317	270	14,000,000	100	S. O. Ohio	2½Q	Oct. 1, 23	50	280	283	280	282	+2
119½	113½	118	116	7,000,000	100	do pfd	1¾Q	Dec. 1, 23	.....	.....	.....	.....	.....	.....
37	30	39	21	1,806,200	100	Swan & Finch	2½S.A.	Nov. 1, 19	60	35	35	33½	35	—1
710	36¼	55¼	40	60,000,000	25	Vacuum Oil Co	50Q	Dec. 20, 23	24,600	54¾	55¾	53¾	54⅞	+1¾
32	20	28	19	100,000	10	Washington Oil Co	$2A	Jan. 31, 22	.....	.....	.....	.....	.....	.....

NEXT week I'm going to tell you something about New Year resolutions.

Old Man Oil
(*Himself*)

EDWARD VALVES

STEEL AND MONEL

PLUG TYPE SEAT & DISC FOR REFINERY PURPOSES.

FORGED STEEL
SIZES ¼" to 2"

CAST STEEL
SIZES 1¼" to 8"

The Edward Valve & Manufacturing Co.
East Chicago, Indiana

NEW YORK BONDS

Week ended Dec. 22

	High	Low	Last	Ch'ge
Atlantic Ref deb 5s	96¾	96⅝	96¾	0
Barnsdall 8s	98⅛	95¼	97¾	+2⅜
Calif. Pet sf 6½s	95⅜	94½	94½	— ⅜
Empire 7½s	90¼	89¾	90¼	+ ⅜
Humble O. & R. 5½s	98½	97	98⅜	+ ⅜
Marland 8s ser A	.....	.....	.....	.....
do 8s with war	123	123	123	+2
do 7½s ser B	98¼	98	98	— ½
Mex Pet of Del cvt 8s	105	104½	104½	+ ½
Pan-Amer. P. & T. 7s	102½	102¼	102¼	— ¼
do 8½s	97¾	96	96¾	— ¼
Pierce Oil deb 8s	82⅜	82⅛	82⅜	+ ⅛
Prod. & Refnrs 8s	106¼	106½	106½	— ¼
do 8s with war	111¼	110¾	110¾	— ¼
Sinclair Cons col 7s	94½	93⅝	94½	+ ½
do 6½s	87¾	87¼	87⅜	0
Sinclair Crude Oil 6s	97⅜	97	97	— ⅜
do 5½s	97½	97	97½	+ ¼
Sinclair Pipe L sf 5s	81½	80½	81	+ ¼
Tidewater Oil 6½s	102½	102⅛	102⅜	+ ⅛
Union Oil of Cal 6s	99	98⅝	99	— ¼
Union Tank Car 7s	104	103	104	0

NEW YORK CURB BONDS

Week ended Dec. 21

	High	Low	Last	Ch'ge
Anglo-Amer Oil 7½s	102	101¾	101¾	— ⅜
Cities Serv 7s C	90	89	89	— ½
do 7s D	88	87½	87½	— ¼
Gen Asphalt 8s	102¾	102¾	102¾	—1¼
Galena Sig 7s	105	103	103	—1
Gulf Oil 5s	94½	94	94	0
Maracaibo 7 new	280	260	275	+10
Phil Pet 7½ with war	100	100	100	— ½
S. O. N. Y. 7s '25	101⅞	101¾	101¾	— ¼
do 7s '26	104¾	104½	104½	0
do 7s '27	105½	104¾	105	+ ¼
do 7s '28	105	105	105	— ¼
do 7s '29	105½	105¼	105½	+ ¼
do 7s '30	106	106	106	+ ¼
do 6½s	106	105¾	105¾	— ¼
Sun Oil 7s	101½	101⅜	101½	0
United Oil Prod. 8s	88	85	85	—3
Vacuum Oil 7s	106¼	105⅞	106¼	+ ¼

NEW YORK CURB MARKET

1922 High	1922 Low	1923 High	1923 Low	Par Value	Stocks	Transactions Week Ended Dec. 21 Sales	First	High	Low	Last	Ch'ge
13	6¾	10	4¼	10	Ark Nat. Gas	2,400	4¾	4⅞	4¾	4¾	— ⅜
9⅜	3¼	7⅛	3⅛	25c	Carib. Synd. ctf	15,300	4⅜	5¾	4¼	5¼	+1¼
242	158	193	128	100	Cities Service	1,870	143	144	139	142½	— ½
72	51	70	64	100	do pfd	8,600	67⅜	68⅜	67⅛	68⅛	+ ¾
25½	16¾	19½	12¾	10	do bankers sh	2,100	15	15⅜	14¾	14¾	— ¼
5	1¼	7⅞	1½	N. P.	Creole Syndicate	17,700	2¼	2½	2¼	2½	+ ¼
.....	.....	18¾	5	N. P.	Derby O. & R.	1,200	.....	7¾	7	7½	+ ½
2¼	.65	1	.25	5	Federal Oil	26,200	.....	.83	.55	.65	+.20
19½	8¾	19¼	16⅛	N. P.	Fensland Oil	.....	.....	.....	.....	.....	.....
.....	.....	38	24	25	General Petroleum	5,200	35	37½	35	37⅜	+3⅛
9¾	2¾	7⅜	1	N. P.	Gilliland Oil	600	2	2¾	2	2¾	+1¼
7¾	78	2⅜	.25	10	Glenrock Oil	8,000	.26	.35	.26	.34	+.09
71½	48½	68¼	45¾	25	Gulf Oil Corp	10,300	59	61½	59	61	+2
26½	2¼	4	1	N. P.	Kirby Petroleum	2,500	1¾	1⅞	1⅝	1⅞	+ ¼
49¼	39⅜	58	45	N. P.	Mammoth A	100	58	58	58	58	+2
10	1	5¾	1½	N. P.	Marland of Mexico	5,200	4⅝	4⅝	4¼	4¾	— ⅛
19	9⅞	20¼	12⅞	10	Mountain Prod	9,300	.....	16⅜	15¼	16¼	+1¼
13⅜	5¾	15½	8¼	5	Mutual Oil Co	30,500	11⅜	11½	11⅜	11¼	+ ⅜
.....	.....	5¾	3½	5	New Bradford	8,500	5	5⅜	5	5⅜	+ ½
83	40	52	16	10	New Eng. Fuel Oil	2,400	19	20	19	19½	—1½
8	.67	1⅛	.50	10	Omar O. & G	3,600	.76	.80	.75	.75	—.03
.....	.....	13	.76	N. P.	Peer Oil Corp	5,400	1¾	2	1½	1¾	— ¼
9¾	4⅞	14⅜	9¾	10	Pennok Oil	5,700	12¾	13¼	12¾	13	0
14¾	10	15⅛	6¼	10	Salt Creek Cons	1,000	8½	10	8½	9⅝	0
22	12⅛	25¼	15½	10	Salt Creek Prod	6,300	19¼	20¼	19¼	20⅛	+1
5	2⅝	4⅞	.80	5	Sapulpa Refining	.....	.90	.94	.86	.90	0
3½	.80	4	.63	5	Seaboard O. & G	15,100	.95	.95	.65	.83	—.07
21	12¼	32¼	11⅝	N. P.	Southern States	490,900	28⅜	*32¼	28	32¼	+4
34	23	30	19	5	Ventura Cons	.....	.....	.....	.....	.....	.....
7⅞	2¼	10⅞	4	5	Wilcox O. & G	13,300	7	7⅛	6¼	6⅜	— ½

PITTSBURGH STOCK EXCHANGE

1922 High	1922 Low	1923 High	1923 Low	Par Value	Stocks	Transactions Week Ended Dec. 21 Sales	First	High	Low	Last	Ch'ge
12⅝	8¼	10	4¼	10	Arkansas Nat Gas	6,741	4⅞	4⅞	4½	4¾	—¼
55½	21	.....	.....	25	Barnsdall Corp A	.....	.....	.....	.....	.....	.....
38½	20	.....	.....	25	do B	.....	.....	.....	.....	.....	.....
112¾	64½	112½	33	100	Columbia Gas	.....	.....	.....	.....	.....	.....
49	42	.....	.....	N. P.	Cosden & Co	.....	.....	.....	.....	.....	.....
2⅞	2⅛	2⅛	2⅛	10	Kansas & Gulf	.....	.....	.....	.....	.....	.....
31⅛	40	27	22¾	25	Lone Star Gas	1,548	25½	27	24⅞	27	+1⅞
58⅞	45¾	58	51	50	Manuf. Light	475	54⅜	54½	54	54⅛	—⅜
45	23¾	59¼	30⅜	N. P	Marland Oil	.....	.....	.....	.....	.....	.....
15⅝	12¼	12	11¼	N. P.	Middle States	.....	.....	.....	.....	.....	.....
23	15⅛	19	11	1	Ohio Fuel Oil	290	13⅞	14	13¾	13¾	+¼
62	44½	65½	30⅜	25	Ohio Fuel Supply	2,666	31½	33¼	31½	33¼	+1¾
26¾	19	24½	18⅝	25	Okla. Nat. Gas	839	23¼	23¾	23¼	23¼	—¼
4	2	2⅞	1⅞	5	Okla. Prod. & Ref	.....	.....	.....	.....	.....	.....
.....	.....	74½	74½	50	Pan-American B	.....	.....	.....	.....	.....	.....
11	6	10½	5¾	5	Pittsburgh O. & G	450	8½	8⅞	x7¾	7¾	—¾
65⅜	57½	53½	50	13.40	Royal Dutch	.....	.....	.....	.....	.....	.....
14⅞	8¾	14	5½	10	Salt Creek Cons	4,240	9	10	x9	9	+1
37¾	8	35⅞	32	N. P.	Sinclair Cons	.....	.....	.....	.....	.....	.....
47⅞	46½	.....	.....	25	The Texas Co	.....	.....	.....	.....	.....	.....
14⅝	10	13½	7	N. P.	Tidal Osage	7,040	7¾	8½	7½	7⅝	+⅜
18⅝	9⅜	14	10⅛	N. P.	Transcontinental	.....	.....	.....	.....	.....	.....
25	24½	29½	23¾	25	Union Nat. Gas	213	28¼	28½	28	28	—½

PITTSBURGH CURB MARKET

1922 High	1922 Low	1923 High	1923 Low	Par Value	Stocks	Transactions Week Ended Dec. 21 Sales	First	High	Low	Last	Ch'ge
.....	.....	15	15	.....	Central Ky. Gas	.....	.....	.....	.....	.....	.....
4⅞	1	1½	.22	10	Colombia Synd	500	.22	.22	†.22	.22	.....
3	1⅞	2⅜	.26	5	Duquesne Oil	33,500	.35	.50	.35	.50	+.15
.....	.....	37	10	10	Forest Oil	.....	.....	.....	.....	.....	.....
.....	.....	1¼	1	1	Grant Oil	.....	.....	.....	.....	.....	.....
71	50	68	46½	25	Gulf Oil Corp	1,500	60	60	60	60	+1½
.12	.02	.03	.02	1	Homer Union	.....	.....	.....	.....	.....	.....
.....	.....	24½	16⅛	N. P.	International Pet	.....	.....	.....	.....	.....	.....
9	6½	8½	4	10	Marshall Oil	85	5	5	5	5	0
.42	.18	.36	.15	1	Mexican Wyoming	6,000	.23	.23	.22	.22	+.02
.....	.....	3⅜	3⅜	5	New Bradford Oil	.....	.....	.....	.....	.....	.....
1½	1	2½	1½	.....	Oklahoma Eastern	2,590	2½	*2½	2⅜	2⅜	+⅛
1¼	1	2	.60	10	Omar Oil & Gas	.....	.....	.....	.....	.....	.....
52	29	22½	7	5	States Oil	.....	.....	.....	.....	.....	.....
.....	.....	80	80	100	Southwest Pa. Pipe	.....	.....	.....	.....	.....	.....
.09	.03	.05	.03	1	Twin City O. & G	.....	.....	.....	.....	.....	.....

*New High †New Low xEx Dividend

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If you have, **National Petroleum News** will bring you into contact with buyers. Why not look over the equipment of your company, jot down what you have no use for and send a classified advertisement to **National Petroleum News.**

Or, if you want to buy used equipment, write us telling what you desire.

The OIL INDUSTRY EXCHANGE is read by a large part of the oil industry each week. Many of these companies have what you want to buy or are looking for the equipment you wish to sell.

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No matter what you "want," whether it is to buy or to sell, to secure a good man or get a better position The Oil Industry Exchange will connect you with the right party at a minimum expense.

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